9-2320-246-20

TM 9-2320-246-20

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL FOR

TRUCK, PLATFORM UTILITY:
1/2 TON, 4 X 4, M274A2 (2320-074-1167), M274A3 (2320-782-5792), M274A4 (2320-782-5793), AND M274A5 (2320-930-1976)

HEADQUARTERS, DEPARTMENT OF THE ARMY

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TECHNICAL MANUAL
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WASHINGTON 25, D. C., *14 July 1967*

ORGANIZATIONAL MAINTENANCE MANUAL
FOR
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1/2 TON, 4 x 4,
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			Paragraphs	Page
CHAPTER	1.	INTRODUCTION		
Section	I.	General	1-1, 1-3	1-1
	II.	Description and data	1-4, 1-7	1-3
CHAPTER	2.	SERVICE AND MAINTENANCE INSTRUCTIONS		
Section	I.	Service upon receipt of material	2-1, 2-4	2-1
	II.	Tools, equipment, and repair parts	2-5, 2-8	2-1
	III.	Lubrication	2-9	2-2
	IV.	Preventive-maintenance services	2-10, 2-14	2-2
	V.	Troubleshooting	2-15	2-6
	VI.	Engine removal and installation	2-16, 2-18	2-10
	VII.	Engine	2-19, 2-20	2-12
	VIII.	Clutch and clutch controls	2-21, 2-23	2-14
	IX.	Engine recoil starter and controls	2-24, 2-27	2-16
	X.	Fuel, air, and exhaust systems (vehicle platform)	2-28, 2-38	2-20
	XI.	Electrical system (vehicle platform)	2-39, 2-42	2-27
	XII.	Transmission linkage and shift levers	2-43, 2-45	2-29
	XIII.	Propeller shaft	2-46, 2-48	2-32
	XIV.	Front axle	2-59, 2-51	2-34
	XV.	Rear axle transmission assembly	2-52, 2-53	2-41
	XVI.	Brake	2-54, 2-60	2-45
	XVII.	Wheels, tires and tubes	2-61, 2-64	2-51
	XVIII.	Steering system	2-65, 2-75	2-53
	XIX.	Frame and brackets	2-76, 2-82	2-63
	XX.	Body	2-83, 2-86	2-66
	XXI.	Engine guard	2-87, 2-90	2-67
	XXII.	Data plates	2-91, 2-96	2-69
	XXIII.	Radio interference suppression	2-97, 2-99	2-71
	XXIV.	Maintenance under unusual conditions	2-100	2-71
CHAPTER	3.	MATERIALS USED IN CONJUNCTION WITH MAJOR ITEM		
Section	I.	General	3-1	3-1
	II.	Armament kit	3-2, 3-4	3-1
	III.	Litter kit	3-5, 3-11	3-1
CHAPTER	4.	SHIPMENT, STORAGE, AND DEMOLITION TO PREVENT ENEMY USE		
Section	I.	Shipment	4-1, 4-4	4-1
	II.	Demolition to prevent enemy use	4-5	4-5

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*This manual supersedes so much of TM 9-2320-213-20, 12 October 1965 as pertains to M274A2, M274A3, and M274A4 truck.

	Paragraphs	Page
CHAPTER 5. DEPROCESSING VEHICLE	5-1	5-1
APPENDIX A. DEFERENCES		A1
APPENDIX B. MAINTENANCE ALLOCATION CHART		B1
APPENDIX C. FABRICATED PARTS		C1
INDEX		INDEX 1

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This technical manual contains instructions for organizational maintenance of the 1/2-ton, 4 × 4, Platform Utility Truck M274 series vehicles equipped with A042 engines (figs. 1-1 and 1-2), as well as descriptions of major components, shipping, storage, and demolition instructions.

b. Appendix A contains a list of current references, including supply manuals, technical manuals, forms, and other available publications applicable to the M274 series vehicles equipped with A042 engines.

c. Appendix B contains the maintenance-allocation chart which lists the maintenance responsibility allocated to each category of

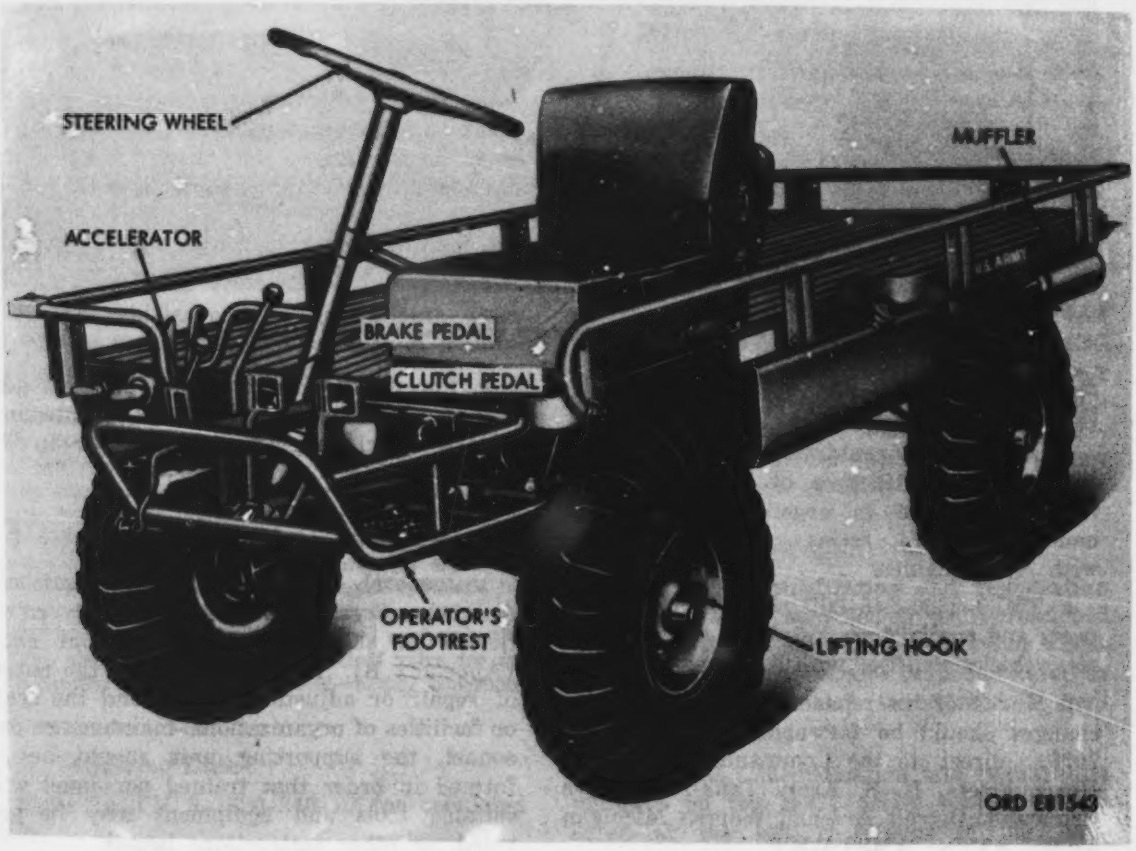

STEERING WHEEL
MUFFLER
ACCELERATOR
BRAKE PEDAL
CLUTCH PEDAL
OPERATOR'S FOOTREST
LIFTING HOOK
ORD E81543

Figure 1-1. 1/2-ton, 4 x 4, platform utility truck-lift front view.

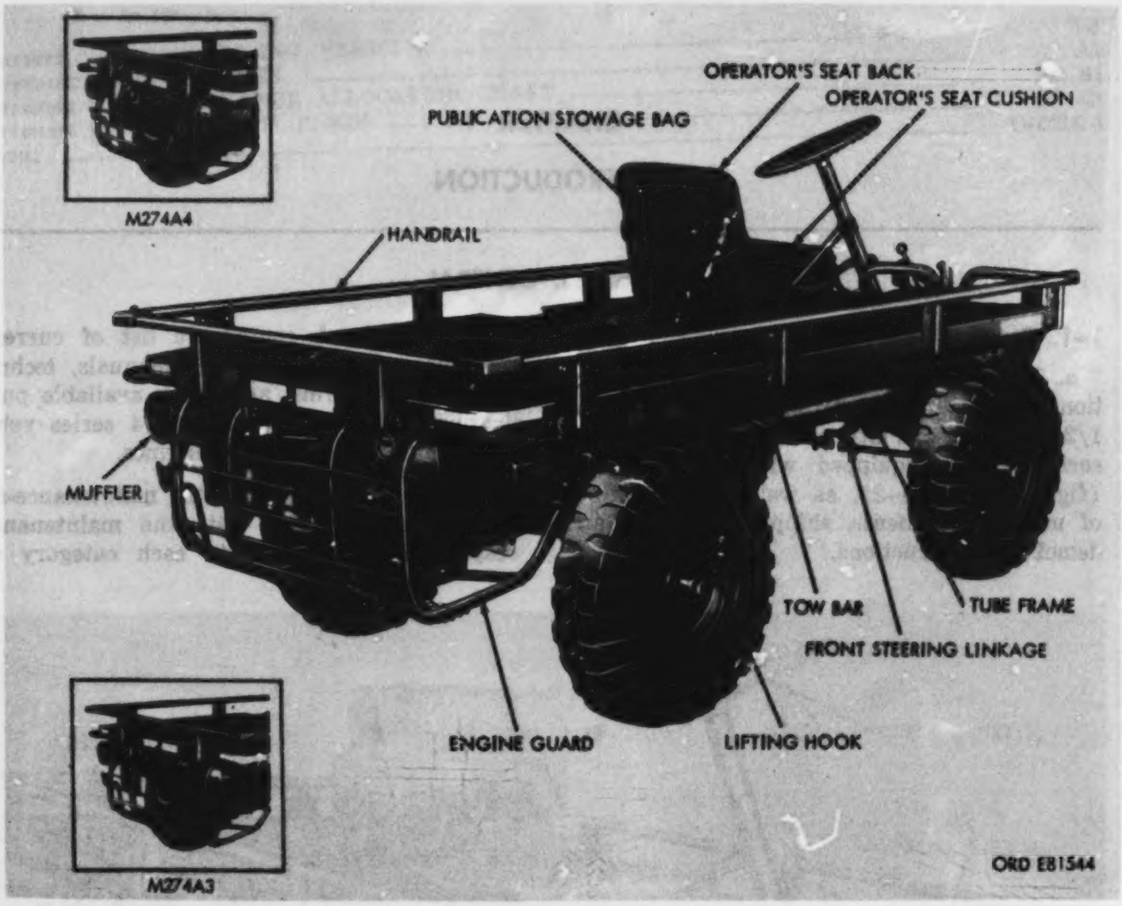

M274A4
OPERATOR'S SEAT BACK
OPERATOR'S SEAT CUSHION
PUBLICATION STOWAGE BAG
HANDRAIL
MUFFLER
TOW BAR
TUBE FRAME
FRONT STEERING LINKAGE
ENGINE GUARD
LIFTING HOOK
M274A3
ORD E81544

Figure 1-2. 1/2-ton, 4 x 4, platform utility truck—right rear view.

maintenance, and a list of special tools authorized for organizational maintenance.

d. Appendix C contains instructions to facilitate the manufacture of the part illustrated, applicable in organizational maintenance of M274 series vehicles equipped with A042 engines.

e. TM 9-2320-246-20P contains the repair parts and special tools listed for the M274 series vehicles equipped with A042 engines.

f. Notice of discrepancies or recommended changes should be forwarded on DA Form 2028, direct to the Commanding General, Headquarters, U. S. Army Tank-Automotive Command, Detroit Arsenal, Warren Michigan 48090, ATTN: AMSTA-MT.

g. For instructions on direct support, general support, and organizational maintenance of the vehicle engine (A042), refer to TM 5-2805-213-14.

1-2. Maintenance Allocation

In general, the prescribed organizational-maintenance responsibilities will apply as reflected in the maintenance-allocation chart (Appendix B). In all cases where the nature of repair or adjustment is beyond the scope or facilities of organizational-maintenance personnel, the supporting unit should be informed in order that trained personnel with suitable tools and equipment may be provided, or other instructions issued.

1-3. Forms, Records, and Reports

a. Authorized Forms. The forms generally applicable for maintaining this material are listed in Appendix A. For a listing of all forms, refer to DA Pam 310-2. For instruction on use of these forms, refer to TM 38-750.

b. Field Report of Accidents.

(1) *Injury to personnel or damage to materiel.* The forms necessary to comply with the requirements of the Army safety program are described in detail in AR 385-40. These reports are required whenever accidents involving injury to personnel or damage to materiel occur.

(2) *Ammunition.* When an accident or malfunction involving the use of ammunition occurs, firing of the lot which malfunctions will be immediately discontinued. In addition to any applicable report⁻ required in 1 above, details of the accident will be reported as prescribed in AR 700-1300-8.

c. Equipment-Improvement Recommendations. Deficiencies detected in equipment or materiel should be reported using the Equipment-Improvement Recommendation Section of DA Form 2407, in accordance with TM 38-750.

d. Precautions. Refer to inside cover for warning on carbon monoxide poisoning, and TM 9-2320-246-10 for operator's precautions.

Section II. DESCRIPTION AND DATA

1-4. Description

a. The 1/2-ton, 4 × 4, Platform Utility Truck is designed as a carrier for infantry ammunition, light cargo, personnel, and weapons. These vehicles can operate on all types of roads, over cross-country terrain, and in all types of weather. The vehicles are able to ford up to 18 inches of water without the aid of special water-fording kits.

b. The vehicles can be turned onto their right side or upside down for ease of maintenance, repair, or lubrication.

Note. Before turning vehicle on its side or back, close crankcase breather valves and close fuel filler cap vent valve. On engines equipped with a fuel primer pump, close primer line shutoff valve. After maintenance, repair, or lubrication, return vehicle to normal position and remove spark plugs. Crank engine crankshaft several revolutions in order to expel any oil that may have accumulated in engine cylinders. Install spark plugs. Open crankcase breather valves and fuel filler cap vent valve. On engines equipped with primer pump, open primer line shutoff valve for engine-starting during extreme cold-weather conditions only.

1-5. Tabulated Data

Refer to TM 9-2320-246-10 for tabulated data.

1-6. Differences Among Models

a. General. Throughout this manual, where differences among vehicle models exist, the models as applicable will be cited. When no models are cited, it will be assumed that no difference exists among the models in that area, and the instructions apply to all models of the vehicle.

b. Models. The illustrations in this manual depict the M274A2, M274A3, M274A4 and M274A5 vehicles, and will be identified individually only when the differences among the vehicles are pertinent to the instruction procedure. Illustrations will also assist organizational personnel in identifying the vehicle and its component parts.

1-7. Vehicle Markings

a. General. Identification and registration numbers must be stenciled in their prescribed areas each time the vehicle is painted or whenever the markings become illegible. Refer to TM 9-213 for materials to be used in stenciling and painting.

b. Location. Identification and registration numbers on the M274 series vehicle are located at the left rear edge of the platform (fig. 1-3) and right front edge of platform (fig. 1-4).

c. Size and Style of Markings. Identification and registration markings shall be applied in block-type letters and numerals. The height of the letters and numerals shall be of a size to fit the edge of the vehicle platform, 1 inch high.

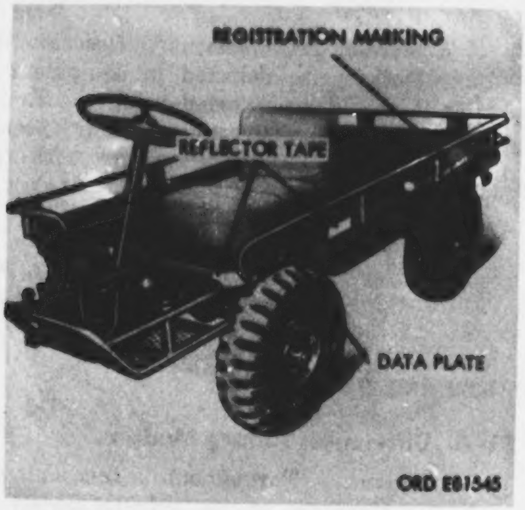

REGISTRATION MARKING
REFLECTOR TAPE
DATA PLATE
ORD E81545

Figure 1-3. Registration markings on left rear edge of platform.

d. Reflective Tape. Yellow reflective tap 1-1/2-inch wide, is used on each corner an side of the platform. Red reflective tape, 1-1/2-inch wide, is used on the center rear and 3/4-inch is used on the sides.

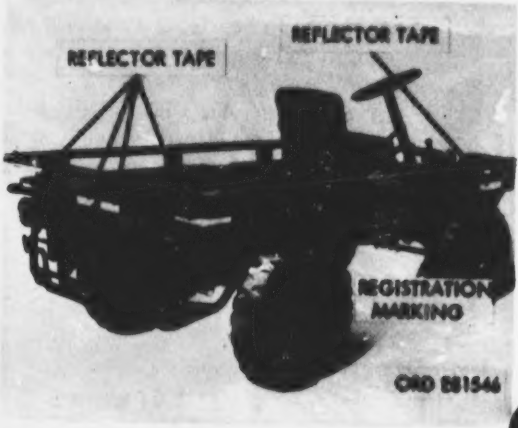

REFLECTOR TAPE
REFLECTOR TAPE
REGISTRATION MARKING
ORD E81546

Figure 1-4. Registration markings on right front edge of platform.

CHAPTER 2

SERVICE AND MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF MATERIAL

2-1. General

a. Perform a "run-in" of at least 1 hour and/or 5 miles on all new or reconditioned vehicles and a sufficient time and number of miles on used vehicles, to completely check their operation according to procedures in TM 9-2320-246-10.

b. Whenever possible the vehicle operator will assist in the performance of these services.

2-2. Equipment Log Book (Binder)

The equipment log book will be with the item to which it pertains when the equipment is serviced, repaired, modified, or transferred. Instructions for preparation and application of equipment log books and special reporting requirements for maintenance preformed, are contained in TM 38-750.

2-3. Preliminary Services

a. General procedures.

(1) If any exterior surfaces are coated with rust-preventive compound, remove with a drycleaning solvent or mineral spirits paint thinner.

(2) Read Processing and Deprocessing Record for shipment, storage, and spare engines tag (DD Form 1397) and follow all precautions thereon. This tag should be attached to the steering wheel, shifting levers, or ignition switch.

(3) On all engines, pull starter cable several times before turning ignition on, to test for mechanical or hydraulic seizure. This precaution is taken because there might be an excess of preservative oil in the combustion chambers.

Note. If vehicle has been driven to the using organization, most or all of the foregoing procedures should have been performed.

(4) Follow the general procedure given in paragraphs 2-1 through 2-3.

b. Specific Procedures. Perform the semiannual "S" preventive-maintenance services as outlined in table 1.

2-4. Correction of Deficiencies

a. Deficiencies disclosed during preliminary inspection and servicing or during break-in period will be corrected by the using organization or support maintenance.

b. Serious deficiencies which appear to involve unsatisfactory design or material will be reported on DA Form 2407, Maintenance Request, as prescribed in TM 38-750, the Army Equipment Record System and Procedures.

Section II. TOOLS, EQUIPMENT, AND REPAIR PARTS

2-5. General

Tools, equipment, and repair parts are issued to the organizational-maintenance personnel for maintaining the materiel. Tools and equipment should not be used for purposes other than prescribed and, when not in use, should be properly stored in the chest and/or roll provided for them.

2-6. Common Tools and Equipment

Standard and commonly used tools and equipment having general application to the materiel are authorized for use by tables of allowances and tables of organization and equipment.

2-7. Special Tools and Equipment

Certain tools and equipment specially designed for organizational maintenance, repair, and general use with the materiel, are listed in table 3, Appendix B, for information only. This list is not to be used for requisitioning replacements. Special tools for organizational maintenance are listed in TM 9-2320-246-20P which is the authority for requisitioning replacements.

2-8. Repair Parts

Repair parts are supplied to organizational-maintenance personnel for replacement of those parts that become worn, broken, or otherwise unserviceable, provided replacement of these parts is within the scope. Repair parts supplied for the M274 series vehicle are located in TM 9-2320-246-20P which is the authority for requisitioning replacements.

Section III. LUBRICATION

2-9. Lubrication Instructions

a. General Lubrication. A lubrication chart is in the Operator's Manual and prescribes cleaning and lubricating procedures. A hardback Lubrication Order (LO 9-2320-246-12) is available for issue and should remain with the vehicle at all times. Intervals specified on the lube chart or lube order are for normal operation and where moderate climate conditions prevail.

b. Special Lubrication. Instructions required for lubricating a specific mechanism or part are covered in the pertinent sections of the applicable TM's.

c. Operator's Maintenance. The operator may assist organizational-maintenance personnel in the lubrication operation in accordance with Commander's prerogative.

d. Reports and Records.

(1) Report unsatisfactory performance of prescribed petroleum fuels, lubricants, or preserving materials, using DA Form 2407, Maintenance Request.

(2) Maintain a record of lubrication of the vehicle on DA Form 2408-2, Lubrication Record.

Section IV. PREVENTIVE-MAINTENANCE SERVICE

2-10. General

Preventive maintenance is the systematic care, inspection, and servicing of equipment, to maintain it in serviceable condition, prevent breakdown, and to assure maximum operational readiness. Preventive maintenance is accomplished by organizational-maintenance personnel by:

a. Performing the semiannual "S"-scheduled periodic services specified by pertinent technical manuals.

b. Lubrication of the equipment in accordance with the pertinent lubrication order, LO 9-2320-246-12.

2-11. Painting

Instructions for the preparation of materiel for painting, methods of painting, and materials to be used, are contained in TM 9-213. Instructions for camouflage painting are contained in FM 5-20B.

2-12. Recording Repairs

Repairs accomplished will be in accordance with procedures and standards prescribed in appropriate technical manuals. The army equipment record system provides for recording repairs required and accomplished on specific items of equipment. This will include, but is not limited to, inspecting, cleaning, adjusting, replacing, and straightening. Faults and shortcomings not corrected by the operator, or those discovered during periodic inspections, will be corrected as far as possible by organizational-maintenance personnel. These repairs will be indicated on DA Form 2404 and recorded on the organizational-maintenance record of the equipment log.

2-13. General Procedures

a. Automatically Applied. All of the general procedures given in the operator's manual will be followed. Organizational-mechanic personnel must be trained to apply these procedures automatically at all times in the performance of their duties.

b. Operator Participation. The operator may assist organizational-maintenance personnel in accordance with Commander's prerogative.

c. Unwashed Vehicle. The operator should present the vehicle for a scheduled preventive-maintenance service in a reasonably clean condition; that is, it should be dry and not caked with mud to an extent which may hamper inspection or service. However, washing of a vehicle should be avoided just prior to an inspection, since certain types of defects such as oil leaks, may not be evident immediately after washing.

d. Plates. Nameplates, caution plates, and instruction plates made of steel, rust very rapidly. When they are found in rusty condition they should be cleaned and heavily coated with an application of lacquer. Refer to TM 9-213.

e. Services. Organizational-maintenance services are defined by, and restricted to, the following general procedures unless approval has been given by support maintenance.

(1) *Adjust.* Make all necessary adjustments in accordance with instructions contained in the pertinent section of this technical manual.

(2) *Clean.* Clean the unit as outlined in TM 9-2820-246-10 to remove old lubricant, dirt, and other foreign material.

(3) *Special lubrication.* This applies either to lubrication that does not appear on the vehicle lubrication order or to items that do appear but which should be performed in connection with maintenance operation.

(4) *Tighten.* All tightening operations should be performed with sufficient wrench-torque to tighten the unit according to good mechanical practices. Use a torque-indicating wrench where specified. Do not overtighten as this may strip threads or cause distortion. Tightening will always be understood to include the correct installation of lockwashers, locknuts, and lockwire or cotter pins.

(5) *Modification work order application.* Enter all required modification work orders (MWO) applicable to the equipment, on DA Form 2408-5.

f. Special Conditions. When conditions make it difficult to perform the complete preventive-maintenance procedure at one time, it can sometimes be handled in sections. Plan to complete all operations within a week, if possible. All available time at half and in bivouac areas must be utilized, if necessary, to assure that maintenance operations are completed.

2-14. Specific Procedures

Table 1 gives the specific procedures to be performed on the vehicle by organizational-maintenance personnel for each semiannual inspection.

Table 1. "S" Preventive-Maintenance Checks and Services

Sequence No.	Item to be inspected	Procedure	References
		PRIOR TO ROAD TEST	
	Perform all daily or before-operation items (TM 9-2820-246-10)	*Note.* When tactical situation does not permit a full road test, perform only those items that require little or no movement of the vehicle.	
1	Engine hour meter	Record engine hour meter reading on Equipment Maintenance Record (organizational) DA Form 2408-3-1.	(par. 1-3)

Table 1. "S" Preventive-Maintenance Checks and Services—Continued

Sequence No.	Item to be inspected	Procedure	References
		PRIOR TO ROAD TEST—Continued	
2	Cooling system	Check fan drive-belt deflection. Check self-adjusting pulley; if loose refer to Direct and General Support Maintenance. Remove leaves, debris, or any obstruction from engine guard or blower impeller guard that may affect engine-cooling.	(par. 2-20)
3	Air intake system	Check air cleaner-to-carburetor hose for secureness. Inspect hose for damage.	(par. 2-36)
4	Breather system	Check crankcase breather valves for operation and secureness; check air vent line.	(par. 2-20)
5	Exhaust system	Check exhaust manifold, exhaust pipes, mufflers, and clamps for looseness and leaks. Check for blown manifold gaskets. When necessary, replace defective parts.	(par. 2-38)
6	Fuel system valve and filter	Check fuel shutoff valve for full ON position. Check around valve stem connections, and the sediment bowl for leaks. Tighten or replace parts as necessary.	(par. 2-20)
7	Air intake system	Check rain deflector and air precleaner for secureness or damage. Tighten when necessary. Replace if damaged since it may restrict air intake system.	(par. 2-37)
8	Fuel system controls	Operate choke, hand throttle, and accelerator pedal. Make sure controls operate freely and without binding. Make sure choke is fully closed when pulled out and fully open when pushed in. Replace cable and free or replace linkage when necessary.	(par. 2-33)
9	Towing connection	Check tow bar bellcrank for secureness; make sure clevis pin, safety pin, and safety chain are present.	(par. 2-71)
		DURING ROAD TEST	
10	Fuel system	Start engine, and check for fuel leaks around carburetor connections and gaskets. Make sure carburetor is properly secured to intake manifold, and that air cleaner hose-to-carburetor adapter is secured to carburetor. Check operation of throttle linkage.	(par. 2-29)
11	Engine	Accelerate engine from rear of vehicle and check for unusual noise or misfiring. Observe exhaust gases for overrich mixture or abnormal blue smoke. Refer to TM 5-2805-213-14.	(par. 2-19)
12	Steering system	Check play in steering gear, with wheels in straightahead position, by turning steering wheel slightly one way and then the other. Excessive play indicates worn steering gear components and/or improper steering gear adjustment. With vehicle moving straight ahead, determine if there is a tendency to wander, shimmy, or pull to one side. Turn wheel through entire range; record any binding.	(par. 2-74)

Table 1. "S" Preventive-Maintenance Checks and Services—Continued

Sequence No.	Item to be inspected	Procedure	References
		DURING ROAD TEST—Continued	
13	Clutch and brake controls	Check operation of clutch pedal, making sure there is adequate free play. Free play should be 1/2 to 1 inch. Check operation of brake pedal, making sure pedal operates freely and does not hang up after pressure has been released. Operate clutch pedal and check for slippage, grabbing, or abnormal action.	(par. 2-23) (par. 2-54)
14	Transmission and transfer operation	Check operation of transmission shift lever for ease of shift. Note operation in all drive gears. Listen for unusual noises. Check transfer gearshift lever for ease of operation and listen for unusual noises.	(par. 2-43) (par. 2-44)
15	Brakes	Make several stops by depressing the brake pedal and note if braking is effective, smooth, and without any unusual noise. Stop vehicle on an incline; if readily available, apply handbrake to determine if braking is effective.	(par. 2-54)
16	Front and rear axles	During the movement of the vehicle listen for any unusual noises in the front or rear axles, which would indicate worn, loose, or damaged components or lack of lubricant.	(par. 2-49) (par. 2-52)
		AFTER ROAD TEST	
17	Spark plugs, compression test, timing, carburetor adjustment, and fuel pump test	Remove, clean, gap (0.030), and test spark plugs. Test compression of each cylinder. Record reading on DA Form 2404. Check magneto breaker points for pitting, gap (0.015) and alinement. Install spark plugs if serviceable . Replace plugs or ignition components as necessary. Perform carburetor mixture and idle adjustments. Test fuel pump pressure. Replace carburetor or fuel pump as necessary.	
18	Fuel tank	Remove, clean, and install fuel tank screen assembly. Drain water and sediment from fuel tank.	(par. 2-30)
19	Brakedrum shoes, or band	Check brakeband (M274A3) or brakeshoes (ALL other vehicles), drum, and linkage, for wear and damage. Replace defective components or adjust as necessary.	(par. 2-55)
20	Propeller shaft and universal joints	Check propeller shaft for secureness or visible damage. Check universal joints for evidence of wear or malfunction. Replace worn or damaged parts as necessary.	(par. 2-46)
21	Tie rods and linkage	Check tie rod ends for wear. Check for bent tie rods or draglink. Check for loose bellcrank arms. Replace worn or damaged parts as necessary.	(par. 2-67)
22	Tires	Rotate (crisscross) and match tires.	(par. 2-64)
23	Lubrication	Lubricate vehicle in accordance with Lubrication Order LO 9-2320-246-12.	
24	Test	Final road-test the vehicle, check items that were repaired, replaced or adjusted, and note additional work required, if applicable.	

Section V. TROUBLESHOOTING

2-15. Scope

a. This section contains troubleshooting information and tests for locating and correcting some of the troubles which may develop in the vehicle. Each symptom of trouble or malfunction (table 2) given for an individual unit is followed by a list of probable causes of the trouble and the corrective action necessary to remedy the malfunction.

b. This technical manual covers most troubles and deficiencies that occur under many conditions of operation. If a specific trouble, test, and remedy are not covered, proceed to isolate the system in which the trouble occurs and then locate the defective component. Use all of the physical senses required to observe and locate troubles. Do not neglect use of any test instrument such as a multimeter, an ohmmeter, voltmeter, ammeter, test lamp, hydrometer, and pressure and vacuum gages that are available. Standard automotive theories and principles of operation apply in troubleshooting the vehicle. Question the vehicle operator to obtain maximum number of observed symptoms. The greater the number of symptoms of trouble that can be evaluated, the easier will be the isolation of the defect.

c. The tests and remedies provided in this section are governed by the scope of the organizational-maintenance level of maintenance.

Table 2. Troubleshooting

Malfunction (symptom)	Probable cause	Corrective action (remedy)
	ENGINE	
1. Engine fails to start.	a. Gasoline tank empty.	a. Replenish fuel.
	b. Ignition switch off or magneto ground defective.	b. Turn ignition switch on or replace magneto ground contact.
	c. Overchoked (flooded).	c. Open throttle wide and pull starter cable. If necessary clean or replace spark plugs.
	d. No fuel reaching cylinders.	d. Replace fuel pump (see Note) (par. 2-29) if found inoperative. Repair or replace fuel line if found clogged.
	e. Magneto out of time.	e. Retime magneto. (See Note.)
	f. Defective ignition system.	f. Remove conduit and lead assembly from spark plugs, hold one-quarter inch from metal of engine; crank engine. If spark does not jump between terminal and engine, system is inoperative. Replace magneto (see Note) and/or replace conduit and lead assemblies.
2. Engine fails to stop.	a. Ignition switch on.	a. Turn ignition switch off.
	b. Ignition switch defective.	b. Replace ignition switch (par. 2-40).
	c. Engine overheated.	c. Check engine fan shroud assembly and cylinder fins for dirt or damage. Replace fan assembly, shroud or engine (par. 2-17) as necessary. (See Note.)
3. Engine misfires or stalls.	a. Fouled spark plugs.	a. Clean, test or replace plugs as necessary. (See Note.)

Note. Refer to TM 5-2805-213-14 for corrective-action instructions.

Table 2. Troubleshooting—Continued

Malfunction (symptom)	Probable cause	Corrective action (remedy)
	ENGINE—Continued	
3. Engine misfires or stalls—Continued.	b. Defective ignition system.	b. Check conduit and lead assemblies for damage and wrong connection. Check ignition switch and magneto for correct operation. Replace parts as necessary.
	c. Magneto points burned or pitted.	c. Install repair kit.
	d. Water in fuel.	d. Drain fuel tank, clean fuel filter, fill with correct fuel.
	e. Fuel lines or filter clogged.	e. Replace gasoline filter element. Clean fuel line (par. 2-31).
4. Loss of power.	a. Valves sticking.	a. Notify direct and general support maintenance.
	b. Magneto out of time.	b. Retime magneto.
	c. Fouled spark plugs.	c. Test, clean or replace spark plugs. (See Note.)
	d. Compression low.	d. With engine and oil warm and spark plugs removed, compression pressure should be a minimum of 100 psi on each cylinder with no more than 10 psi variance between cylinders. (See Note.) If not correct, notify direct and general support maintenance.
	e. Governor setting incorrect.	e. Adjust governor linkage or replace governor if necessary. (See Note.)
	FUEL SYSTEM	
5. No fuel at carburetor.	a. Fuel tank empty. Fuel shutoff valve clogged. Fuel filter clogged.	a. Fill fuel tank. Open shutoff valve. Clean fuel filter. (See Note.)
	b. Defective fuel pump.	b. Replace fuel pump (See Note.)
6. Fuel in carburetor but not in cylinder.	a. Carburetor jets or passages clogged.	a. Replace carburetor. (See Note.)
7. Leak in fuel system.	a. Loose connections; defective lines.	a. Check for leak in fuel tank and lines; repair or replace as necessary.
	EXHAUST SYSTEM	
8. Excessive exhaust noise.	a. Loose exhaust pipe connection (fig. 2-1).	a. Tighten all exhaust manifold connections or replace gaskets. (See Note.)
	b. Defective muffler (fig. 2-1).	b. Replace muffler (par. 2-38).
	COOLING SYSTEM	
9. Engine runs to hot.	a. Fan belt broken.	a. Replace fan belt. (See Note.)
	b. Fan damaged or not operating properly.	b. Repair or replace fan if damaged. Replace fan shaft bearings if necessary. (See Note.)

Note. Refer to TM 5-2805-213-14 for corrective-action instructions.

Table 2. Troubleshooting—Continued

Malfunction (symptom)	Probable cause	Corrective action (remedy)
	COOLING SYSTEM—Continued	
9. Engine runs too hot—Continued.	c. Fan guard louvers closed.	c. Open fan louvers. (See Note.)
	d. Engine shroud assembly dirty or damaged.	d. Clean between engine and shroud; replace shroud if necessary. (See Note.)
	STARTING SYSTEM	
10. Starter cable fails to rewind.	a. Rewind spring broken.	a. Replace starter (par. 2–24).
	b. Starter cable kinked, frayed or broken.	b. Replace starter cable (par. 2–24).
11. Pulling starter cable fails to turn engine.	a. Starter cable kinked, frayed or broken.	a. Replace starter cable (par. 2–24).
	b. Ratchet plunger broken or jammed.	b. Repair or replace plunger.
	c. Plunger spring broken.	c. Replace plunger spring.
	IGNITION SYSTEM	
12. Ignition faulty while engine is running.	a. Faulty spark plugs.	a. Clean gap or replace plugs. (See Note.)
	b. Faulty conduit and lead assemblies.	b. Repair or replace conduit lead assemblies. (See Note.)
	c. Faulty switches.	c. Replace ignition switch. (See Note.)
	d. Magneto incorrectly timed.	d. Retime magneto. (See Note.)
	e. Magneto faulty.	e. Repair or replace magneto. (See Note.)
	CLUTCH	
13. Clutch slips.	a. Improper pedal adjustment.	a. Adjust pedal-free travel.
	b. Clutch controls binding.	b. Check to see that controls move freely. Repair or replace as necessary.
	c. Driven disk facing burned or worn.	c. Replace clutch-driven disk. (See Note.)
	d. Weak springs.	d. Replace pressure plate.
14. Clutch grabs.	a. Clutch controls binding.	a. Check to see that controls move freely. Repair or replace as necessary.
	b. Driven disk facing burned or worn.	b. Replace clutch-driven disk. (See Note.)
	c. Broken or bent parts on pressure plate.	c. Replace pressure plate. (See Note.)
	d. Loose engine mounting.	d. Tighten engine mounting bolts (par. 2–17).
15. Clutch rattles.	a. Clutch bearing carrier return spring unhooked or broken.	a. Hook spring in proper position or install new one.
	b. Driven plate drive springs broken.	b. Replace clutch-driven plate assembly (See Note.)
	AXLES AND TRANSMISSION ASSEMBLY	
16. Excessive noise.	a. Insufficient or incorrect lubricant.	a. Check lubricant for grade and quantity.
	b. Overheated transmission.	b. Check lubricant for grade and quantity. Replace lubricant if necessary.

Note. Refer to TM 5–2805–213–14 for corrective-action instructions.

Table 2. Troubleshooting—Continued

Malfunction (symptom)	Probable cause	Corrective action (remedy)
	AXLES AND TRANSMISSION ASSEMBLY—Continued	
16. Excessive noise—Continued.	c. Gears or bearings worn or broken.	c. Replace transmission axle assembly (par. 2-52).
	d. Wheel bearings or "U" joint assemblies worn.	d. Repair or replace as necessary (par. 2-48).
17. Slips out of gear.	a. Damaged poppets, springs, or interlock.	a. Replace transmission axle assembly (par. 2-52).
	b. Gears or bearings worn.	b. Replace transmission axle assembly (par. 2-52).
	c. Shift fork bent causing partial engagement.	c. Replace transmission axle assembly (par. 2-52).
18. Hard shifting.	a. Clutch not releasing.	a. Adjust clutch pedal-free travel (par. 2-23).
	b. Clutch-driven plate binding or splines, or pressure plate faulty.	b. Replace or clean clutch-driven plate or pressure plate as necessary. (See Note.)
	c. Controls binding.	c. Lubricate.
	PROPELLER SHAFT	
19. Excessive vibration or noise.	a. Foreign material on shaft.	a. Clean shaft.
	b. Lack of lubricant.	b. Lubricate.
	c. Bearings worn.	c. Install new bearings (par. 2-48).
	d. Shaft bent.	d. Replace shaft (par. 2-47).
	BRAKE	
20. Brake drags.	a. Improper brake cable adjustment.	a. Adjust brake cable (par. 2-54).
	b. Brake cable return spring broken or missing.	b. Install new return springs (par. 2-54).
21. Brake fails to hold.	a. Brake adjustment too loose.	a. Adjust brake (par. 2-55).
	WHEELS AND TIRES	
22. Wheel wobbles.	a. Wheel bent.	a. Replace wheel (par. 2-62).
	b. Wheel loose on wheel hub.	b. Tighten nuts on wheel hub bolts.
	c. Wheel hub loose on wheel joint.	c. Tighten wheel hub nut (par. 2-62).
23. Abnormal tire wear.	a. Wheels out of alinement.	a. Aline wheels (par. 2-67).
	b. Excessive use of fourwheel steer.	b. Do not use four-wheel steer unless condition requires it.
	c. Wheel bent.	c. Replace wheel (par. 2-62.)
	STEERING	
24. Steering difficult.	a. Lack of lubrication.	a. Lubricate vehicle as specified in Lubrication Order LO 9-2320-246-12.
	b. Steering gear damaged (fig. 2-2).	b. Replace steering gear assembly (par. 2-74).
	c. Low tire pressure.	c. Inflate tires to 12 psi.
	HOUR METER	
25. Not operating.	a. Internal mechanical or electrical damage.	a. Replace hour meter (par. 2-42, or see Note).
	b. Disconnected or broken wire.	b. Connect or repair wire.

Note. Refer to TM 5-2805-213-14 for corrective-action instructions.

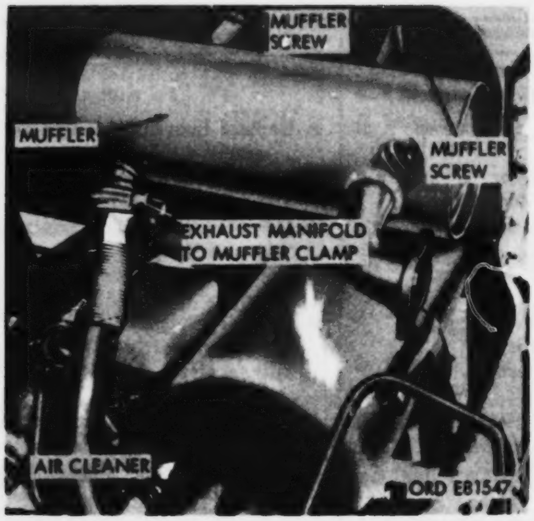

MUFFLER SCREW
MUFFLER
MUFFLER SCREW
EXHAUST MANIFOLD TO MUFFLER CLAMP
AIR CLEANER
ORD E81547

Figure 2-1. Location of possible exhaust leaks.

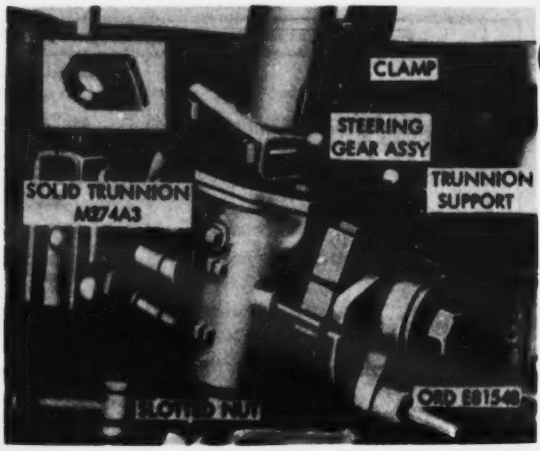

CLAMP
STEERING GEAR ASSY
SOLID TRUNNION M274A3
TRUNNION SUPPORT
SLOTTED NUT
ORD E81548

Figure 2-2. Location of steering gear assembly.

Section VI. ENGINE REMOVAL AND INSTALLATION

2-16. Coordination with Direct Support and General Support Maintenance Personnel

In general, the prescribed organizational-maintenance responsibilities will apply as reflected in Appendix B. The replacement of certain assemblies is normally the function of direct and general support maintenance, but may be performed by organizational maintenance in an emergency, provided permission is obtained from the supporting unit officer.

2-17. Engine Removal

a. Remove engine guard (par. 2-87).

b. Remove engine access lid.

c. Drain engine oil from crankcase.

d. Disconnect intake tube (air cleaner-to-carburetor). Loosen outer clamps at each end of air cleaner-to-carburetor adapter tube (fig. 2-3).

e. Remove governor cover (TM 5-2805-213-14).

f. Disconnect throttle and choke control cables (fig. 2-4).

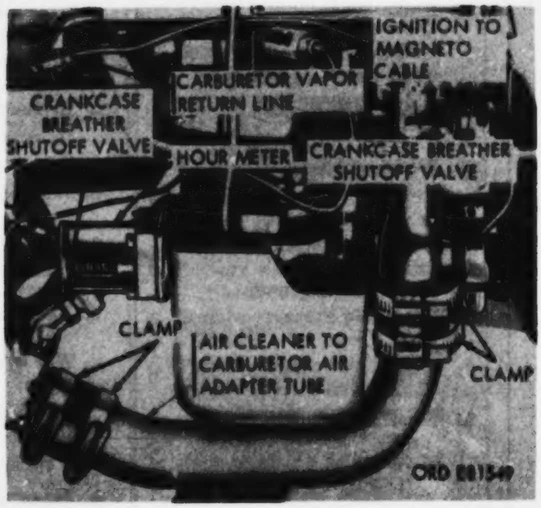

IGNITION TO MAGNETO CABLE
CARBURETOR VAPOR RETURN LINE
CRANKCASE BREATHER SHUTOFF VALVE
HOUR METER
CRANKCASE BREATHER SHUTOFF VALVE
CLAMP
AIR CLEANER TO CARBURETOR AIR ADAPTER TUBE
CLAMP
ORD E81549

Figure 2-3. Air cleaner-to-carburetor adapter tube.

g. Remove air shroud (TM 5-2805-213-14).

h. Disconnect ignition switch-to-magneto cable from magneto (figs. 2-3 and 2-4) and ground magneto or disconnect spark plug wires (TM 5-2805-213-14).

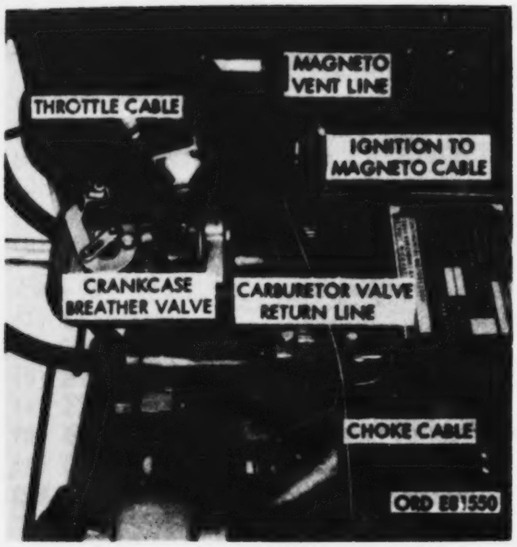

MAGNETO VENT LINE
THROTTLE CABLE
IGNITION TO MAGNETO CABLE
CRANKCASE BREATHER VALVE
CARBURETOR VALVE RETURN LINE
CHOKE CABLE
ORD E81550

Figure 2-4. Location of controls, cables, and lines.

i. Disconnect carburetor vapor return line at union located at top of engine, left of magneto (figs. 2-3 and 2-4).

j. Disconnect magneto vent line from air cleaner (fig. 2-4).

k. Remove air cleaner (par. 2-36).

l. Disconnect crankcase vent line on left side of engine, on engine side of valve (fig. 2-5).

m. Disconnect exhaust manifold (one clamp at muffler) (fig. 2-1).

n. Remove muffler (par. 2-38).

o. Remove air cleaner (par. 2-36).

p. Remove two flange bolts (starter to engine crankcase. It is not necessary to remove starter).

q. Disconnect fuel line at fuel tank side of shutoff valve (fig. 2-5).

r. Position a floor jack with suitable blocking under engine (fig. 2-6) or use lifting eye and "A" frame, or small gantry if available.

Caution: **When removing engine be sure spark plug cable clears crossmember bolts.**

s. Remove six hexagon nuts, lockwashers, and screws from transmission-engine bellhousing.

t. Lower engine and move it away from vehicle (fig. 2-7). Recommend two persons for this operation.

2-18. Engine Installation

For engine installation, reverse steps in paragraphs 2-17*a* through *t*, and figures 2-3 through 2-7.

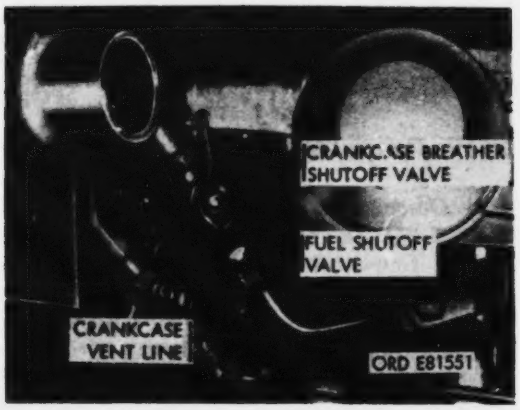

CRANKCASE BREATHER SHUTOFF VALVE
FUEL SHUTOFF VALVE
CRANKCASE VENT LINE
ORD E81551

Figure 2-5. Crankcase vent valve disconnected.

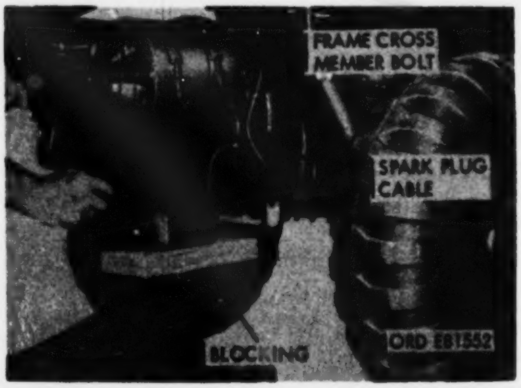

FRAME CROSS MEMBER BOLT
SPARK PLUG CABLE
BLOCKING
ORD E81552

Figure 2-6. Locating position of floor jack and blocking under engine.

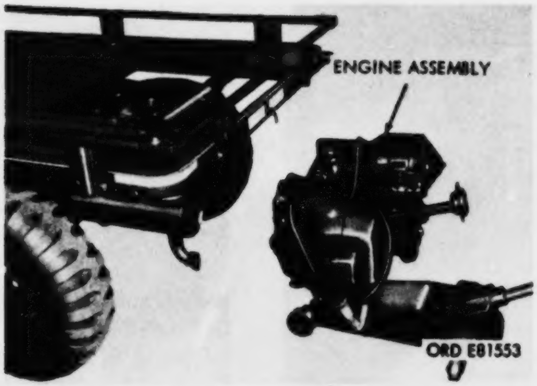


Figure 2-7. Removing or installing engine assembly.

Section VII. ENGINE

2-19. Description and Data

a. Description. The engine (refer to TM 5-2805-213-14 for illustration) is an air-cooled, four-stroke cycle, two-cylinder, horizontally opposed valve-in-head gasoline internal-combustion engine. The electrical components, magneto, and conduit and lead assemblies are fully radio-interference suppressed. The carburetor, governor and magneto are mounted near the top of the engine. The oil filter and recoil starter are mounted on the flywheel housing. The crankcase is vented with air from the air cleaner outlet through the crankcase, and connected to the carburetor air cleaner adapter. Both the crankcase breather inlet and outlet lines are equipped with a shutoff valve which must be closed when the vehicle is turned on its side or upside down. Shutoff valves must be open for normal operation.

b. Data.

Part number:

M274A2 ---------------10919400
M274A3
M274A4
M274A5

Type:

M274A2 thru M274A5. ---2-cylinder horizontally opposed

Bore:
M274A2 thru M274A5 ---3.0 in.

Stroke:
M274A2 thru M274A5 ---3.0 in.

Firing order:
M274A2 thru M274A5 ---1-2

Piston displacement:
M274A2 thru M274A5 ---42.40 cu. in.

Governed speed
M274A2 thru M274A5 ---3,600 rpm

Compression ratio:
M274A2 thru M274A5 ---6.4-1

Horsepower (including fan, less other accessories):
M274A2 thru M274A5 ---13.6 at 3,200 rpm

Torque (including fan, less other accessories):
M274A2 thru M274A5 ---29.5 ft lb at 1,200 rpm

Ignition:
M274A2 thru M274A5 ---Magneto, ORD Part Number -5097517

Crankcase capacity:
M274A2 thru M274A5 ---2-1/2 qt

Fuel (minimum):
M274A2 thru M274A5 ---83 octane

Oil filter:
M274A2 thru M274A5 ---Replaceable element type

Oil pump:
M274A2 thru M274A5 ---Gear type

Clutch:
M274A2 thru M274A5 ---Single disk, 6.5- in. ORD Part Number 7966621

2-20. General

Refer to TM 5-2805-213-14 and Lubrication Order LO 5-2805-213-14 for details not covered here in pertaining to the removal, installation, repair and servicing of the following engine systems and components:

a. Lubrication System.

(1) Oil filter.
(2) Oil pressure relief valve.
(3) Oil filter tube.
(4) Oil tube assembly.
(5) Oil dipstick.

b. Fuel System.

(1) Carburetor.
(2) Fuel pump.
(3) Fuel filter assembly.
(4) Fuel primer pump.
(5) Fuel primer pump shutoff valve.
(6) Carburetor air cleaner adapter.
(7) Fuel shutoff valve.

(*a*) *Removal.* Disconnect fuel tank to fuel shutoff valve line at inlet side of the fuel shutoff valve, and fuel shutoff valve to fuel filter line at the outlet side of the fuel shutoff valve. Remove shutoff valve and clean with mineral spirits paint thinner, and dry thoroughly. Replace valve if defective or damaged.

(*b*) *Installation.* Connect fuel tank to fuel shutoff valve line to inlet side of fuel shutoff valve. Connect fuel shutoff valve to fuel filter line, to outlet side of shutoff valve. Fuel shutoff valve must be in "OPEN" position for normal operation.

(8) Air cleaner-to-carburetor air adapter tube. Refer to paragraph 2-17*d*.
(9) Lines and tubes.
  (*a*) Fuel filter assembly-to-fuel primer pump shutoff valve.
  (*b*) Fuel filter assembly-to-fuel pump.
  (*c*) Fuel pump-to-carburetor.
  (*d*) Careburetor-to-fuel tank return line.
  (*e*) Fuel primer pump tube.

c. Governor Assembly and Governor Control Linkage Rod.

d. Cooling System.

(1) Fan belt guard and fan guard.
(2) Fan belt.
(3) Fan drive pulley.
(4) Fan assembly.
(5) Top shroud.
(6) Left front and rear, right front and rear shrouds.
(7) Flywheel housing shroud.

e. Electrical System.

(1) Magneto.
(2) Spark plugs and spark plug cables.

f. Crankcase Breather System. Crankcase breathers.

g. Manifolds.

(1) Intake tubes and manifolds.
(2) Exhaust manifold (fig. 2-8).

h. Bypass Tubes. (fig. 2-8).

i. Valve Clearance Adjustment, Rocker Arms.

j. Cylinder Compression Test.

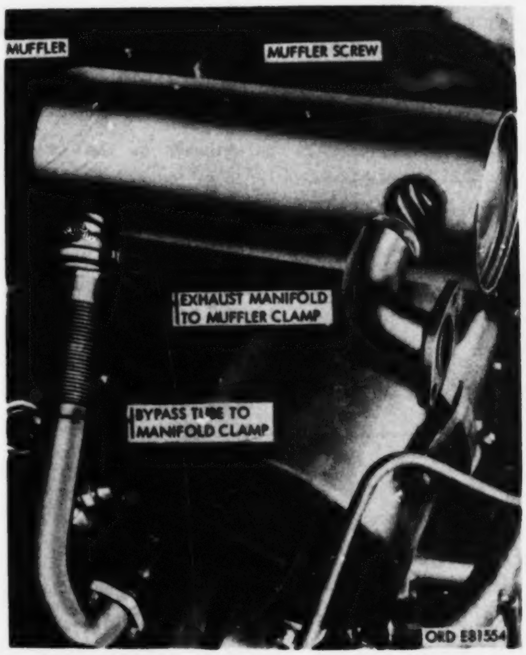

MUFFLER
MUFFLER SCREW
EXHAUST MANIFOLD TO MUFFLER CLAMP
BYPASS TUBE TO MANIFOLD CLAMP
ORD E81554

Figure 2-8. Exhaust manifold-to-muffler connection.

Section VIII. CLUTCH AND CLUTCH CONTROLS

2-21. General

The following paragraphs cover the description, removal, installation, and adjustment of the clutch and clutch controls.

2-22. Clutch

a. Coordination. Refer to pars. 1-2 and 2-16 for information on coordination with the direct support-maintenance unit.

b. Description. Refer to TM 5-2805-213-14 for clutch description, removal, and installation.

2-23. Clutch Controls

a. Description. The clutch release bearing (fig. 2-9), bearing carrier, and yoke are installed in the rear axle housing. A clutch control rear cable extends from the clutch release yoke to a coupling located just forward of the front edge of the platform. From this coupling the control front cable (fig. 2-10) extends to a lever on the right rear end of the clutch pedal shaft. An adjustment is incorporated in the front cable.

b. Clutch Release Bearing, Bearing Carrier, Yoke, and Clutch Control Rear Cable.

Note. The numbers in parentheses in the paragraphs that follow are keyed to figure 2-11.

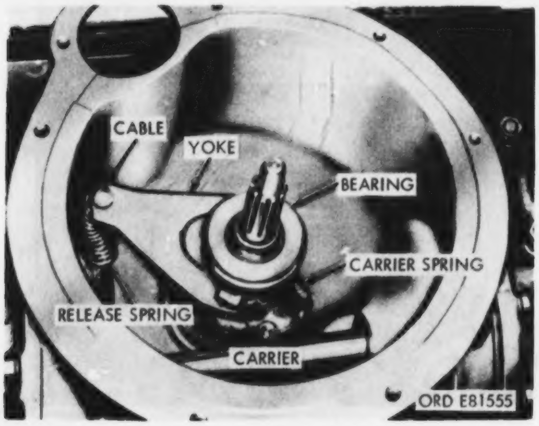


Figure 2-9. Clutch release bearing carrier and yoke installed.

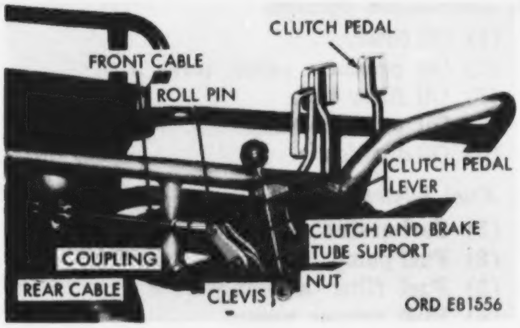


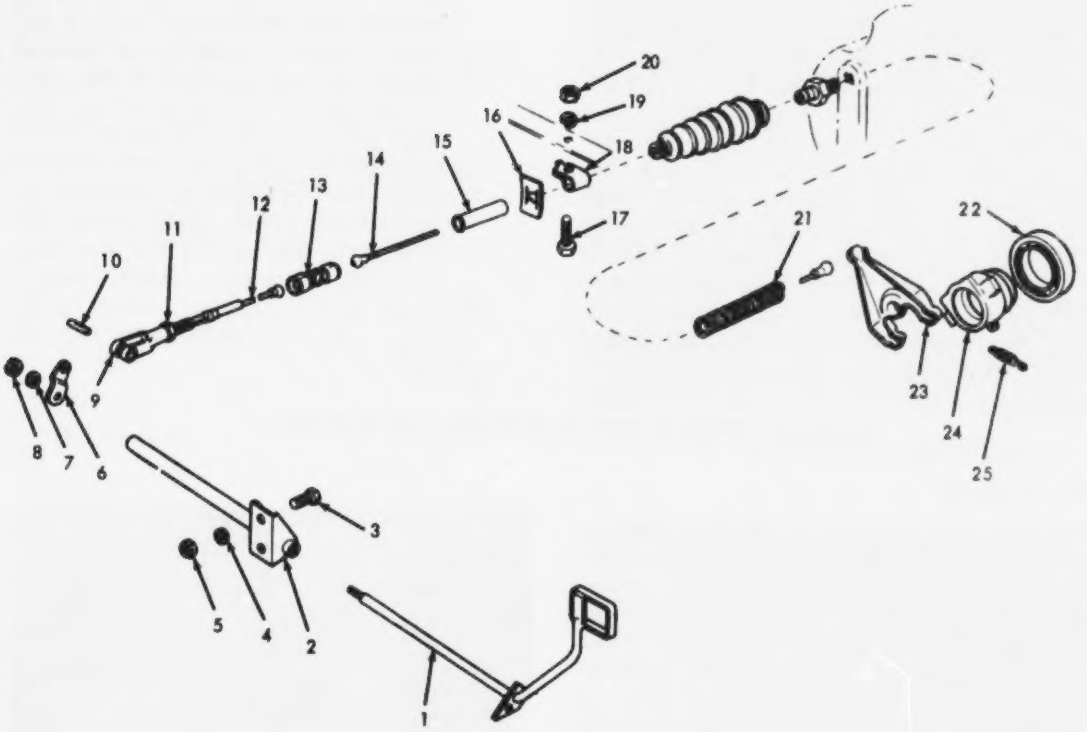
Figure 2-10. Clutch pedal and front control cable.

(1) *Removal.*
   (*a*) Remove engine (par. 2-17).
   (*b*) Disconnect front end of clutch control rear cable (14).
   (*c*) Disconnect carrier spring (25) from lugs on transmission drive gear bearing retainer and release bearing carrier (24); remove carrier and release bearing (22). Press bearing carrier out of bearing. Pull release yoke (23) out from between release spring (21) and ball on end of rear cable assembly (14), and remove spring.
   (*d*) Unscrew threaded adapter of rear cable assembly (14) from transmission housing. Remove nut (20), lockwasher (19), and capscrew (17) securing electrical clamp (18) and rear cable assembly to platform. Remove cable assembly and clamp from cable.

(2) *Installation.* Reverse steps (*b*) through (*d*), paragraph 2-23*b*, for installation of clutch release bearing, bearing carrier, yoke, and clutch control rear cable. Install engine (par. 2-18).

c. Clutch Control Front Cable Assembly (Figure 2-11).

(1) *Removal.* Separate rear end of clutch control front cable assembly (12) from quick-disconnect (13) coupling. Drive out roll pin (10) con-



ORD E81557

1—Clutch pedal shaft
2—Shaft bushing
3—Hexagon head capscrew
4—Lockwasher
5—Plain hexagon nut
6—Clutch pedal lever
7—Flat washer
8—Self-locking hexagon nut
9—Rod end clevis
10—Spring (roll) pin
11—Plain hexagon nut
12—Front cable assembly
13—Quick-disconnect coupling
14—Rear cable assembly
15—Spacer sleeve
16—Spring nut
17—Hexagon head capscrew
18—Clamp loop (electrical)
19—Lockwasher
20—Plain hexagon nut
21—Release spring
22—Carrier and release bearing
23—Yoke
24—Transmission drive gear bearing retainer
25—Carrier spring

Figure 2-11. Clutch controls—exploded view.

necting clevis (9) on front end of cable assembly (12) to clutch pedal level (6), and remove cable. Loosen nut (11) securing clevis (9), and remove clevis (9) and nut from cable (12).

(2) *Installation.* Reverse procedure in paragraph 2–23*c*(1) for installation of clutch control front cable assembly, allowing 3/4-inch clutch pedal free play, and secure by tightening nut (11) against clevis (9).

d. Clutch Pedal and Lever (Figure 2-11).

(1) *Removal.* Drive out roll pin (10) connecting clutch control front cable (12) and clutch pedal lever (6). Unscrew nut (8) from end of clutch pedal shaft (1). Pull plain washer (7) and clutch pedal lever off right end of shaft. Remove two hex nuts (5), lockwashers (4), and bolts (3) securing bushing (2) near left end of clutch pedal shaft to bracket on operator's footrest. Pull clutch pedal and bushing to lift out of brake pedal tube.

(2) *Installation.* Slide bushing (2) onto clutch pedal shaft (1) and push bushing and shaft into brake pedal tube. Position bushing on bracket on footrest and secure with two hex-headed bolts (3), lockwashers (4), and hex nuts (5). Position clutch pedal shaft (1) at right end of brake pedal shaft with offset pointing up, and secure clutch pedal lever (6) with plain washer (7) and hex locknut (8). Connect clutch control front cable (12) and clutch pedal lever (16), and secure with roll pin (10).

Section IX. ENGINE RECOIL STARTER AND CONTROLS

2-24. General

The steps for removal of engine starter, starter pulley, and starter controls, must be followed in the sequence outlined in paragraph 2-25, to prevent the rapid rewind of the recoil starter and damage to the starter cable, starter pulley or other starter components.

2-25. Removal of Recoil Starter and/or Controls

a. Remove engine access lid.

b. Loosen two spring clamps and slide clamps off hose, rearward toward pulley housing; expose starter front cable quick-disconnect by separating hose from pulley housing, and sliding hose forward onto rope tube. Remove nut, lockwasher, capscrew and plain washer securing plate to frame crossmember (fig. 2-12). Coordinate with direct support-maintenance personnel for replacement and fabrication of front starter cable hose.

c. Loosen starter cable tube-adjusting stop and locking nut at forward end of starter cable tube (fig. 2-13) and adjust tube and plate (*b* above) forward as far as possible.

d. Disconnect front starter cable from rear starter cable at front end of quick-disconnect coupling (fig. 2-14).

Caution: **Disconnect starter cable only from front end of quick-disconnect to prevent cable from slipping into starter pulley housing, and causing possible damage by fast-rewind kinking.**

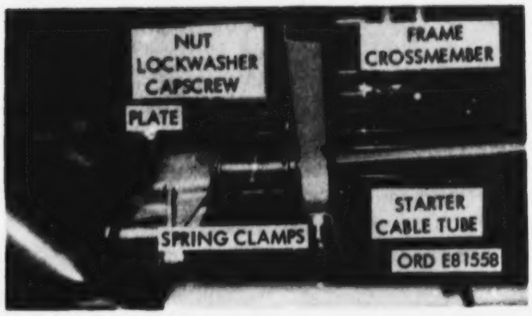


Figure 2-12. Location of spring clamps and starter pulley housing.

e. Pull front starter cable assembly forward through the starter cable tube. Check for kinks or frayed wires. Replace wire cable if required or fabricate if necessary.

Note. It is not necessary to remove the engine or starter to replace the starter, starter pulley, starter pulley housing, or starter cables.

f. Loosen two adjustable hose clamps (fig. 2-15) and slide hose toward recoil starter, exposing rear starter cable.

g. Pull approximately three feet of cable out of recoil starter and secure by looping around a 1/2-inch bolt (or an object similar in shape) near the end of the rear starter cable guide tube (fig. 2-16).

h. Remove three capscrews and washers from pulley housing and remove pulley housing from under right side of platform (fig. 2-17).

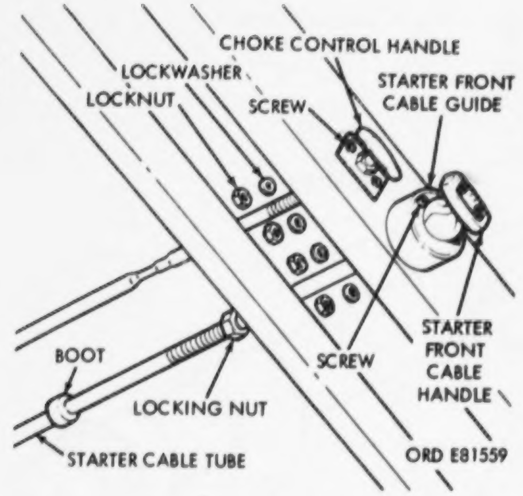

CHOKE CONTROL HANDLE
LOCKWASHER
LOCKNUT
SCREW
STARTER FRONT CABLE GUIDE
BOOT
LOCKING NUT
SCREW
STARTER FRONT CABLE HANDLE
STARTER CABLE TUBE
ORD E81559

Figure 2-13. Starter cable tube-adjusting stop and locking nut.

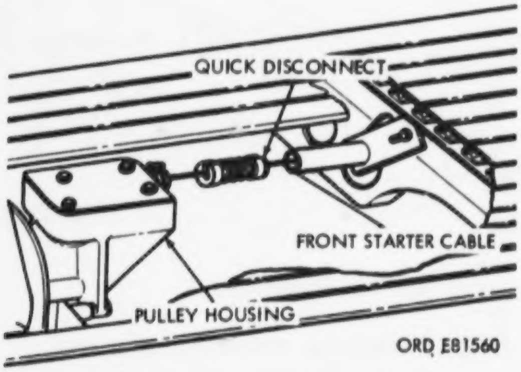

QUICK DISCONNECT
FRONT STARTER CABLE
PULLEY HOUSING
ORD E81560

Figure 2-14. Location of quick-disconnect coupling.

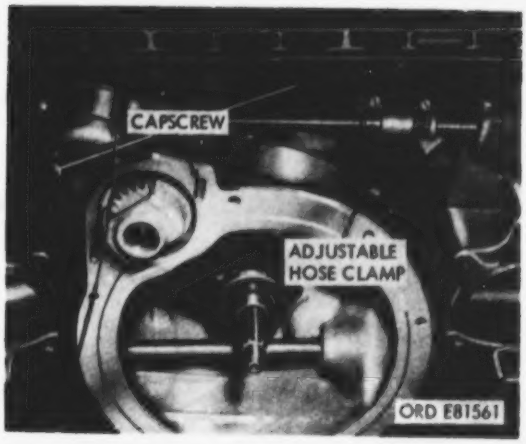

CAPSCREW
ADJUSTABLE HOSE CLAMP
ORD E81561

Figure 2-15. Location of adjustable hose clamps.

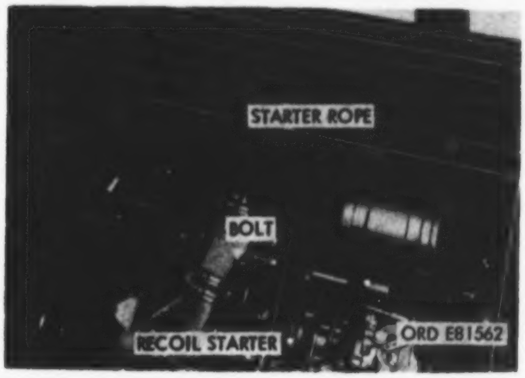

STARTER ROPE
BOLT
RECOIL STARTER
ORD E81562

Figure 2-16. Wire cable retracted from starter pulley housing.

i. Remove four capscrews and lockwashers from top of pulley housing. Remove gasket and top of pulley housing. Remove capscrew and plain washer from pulley. Remove pulley and plain washer under pulley. Disconnect quick-disconnect coupling and remove starter rope from pulley housing (fig. 2-18). Replace quick-disconnect coupling on starter rope.

j. If repair or replacement of starter assembly or rear starter cable is required, remove two capscrews and lockwashers attaching recoil starter to transmission housing, and remove starter (fig. 2-19).

k. Remove recoil starter through access lid opening (fig. 2-20).

2-26. Repair or Replacement of Front Starter Cable Tube

a. If repair or replacement of front starter cable tube, cable-adjusting stop, boot, front sleeve bushing or rear sleeve bushing is required, slide tube to the rear, off adjusting end of starter cable guide, and remove from vehicle (fig. 2-13).

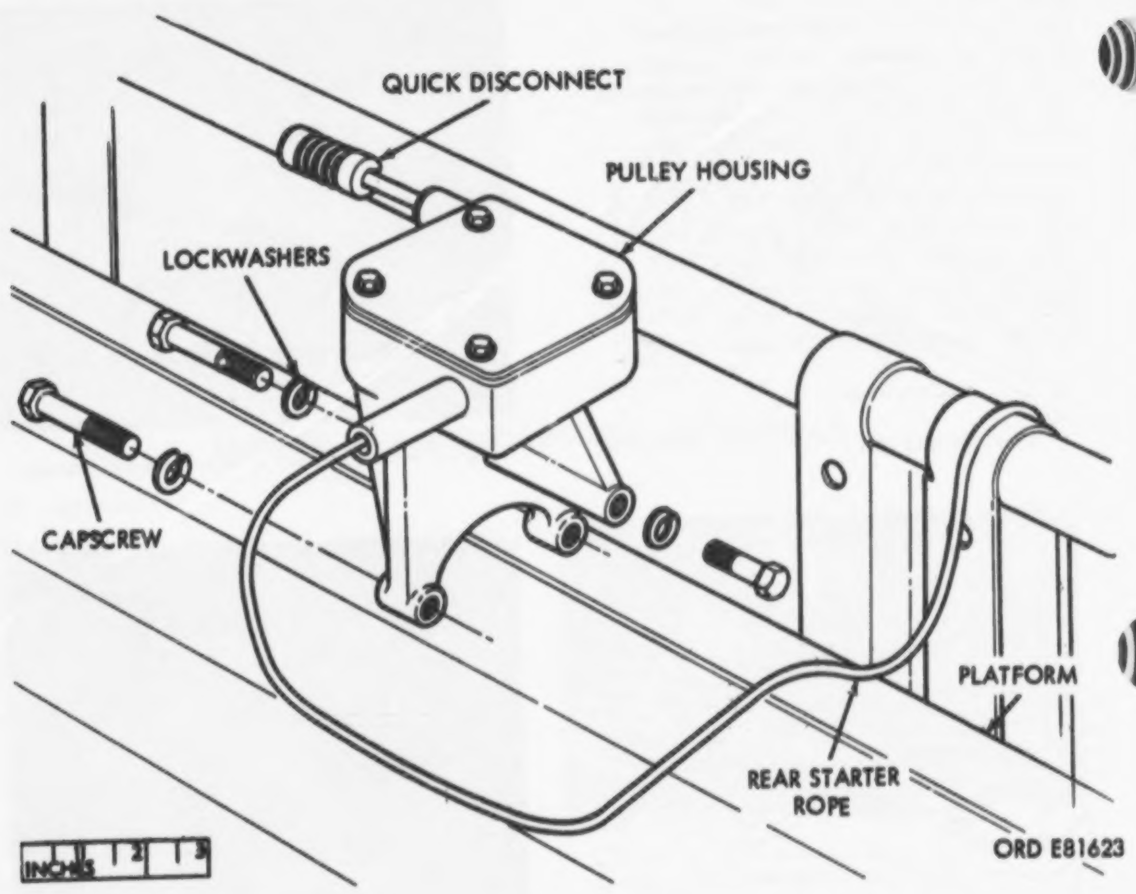

QUICK DISCONNECT
PULLEY HOUSING
LOCKWASHERS
CAPSCREW
PLATFORM
REAR STARTER ROPE
INCHES 1 2 3
ORD E81623

Figure 2-17. Pulley housing resting on top right side of platform.

b. If repair or replacement of starter cable guide is required, remove two screws, lockwasher and locknuts (fig. 2-13), remove guide and coordinate with direct/general support maintenance.

2-27. Installation of Recoil Starter and Starter Controls

Reverse the sequence of operation in paragraph 2-25 for the installation of recoil starter and starter controls.

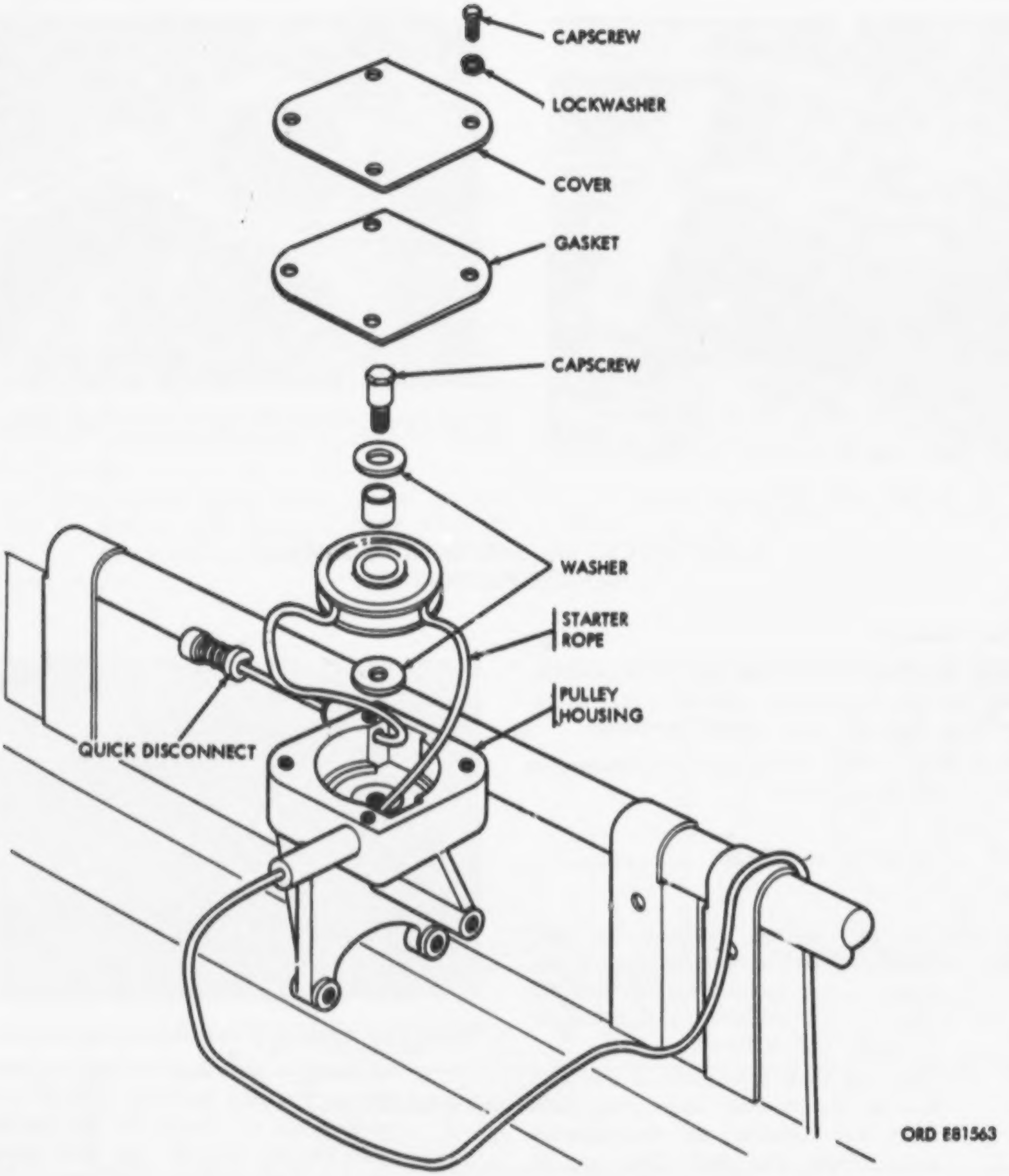

CAPSCREW
LOCKWASHER
COVER
GASKET
CAPSCREW
WASHER
STARTER ROPE
PULLEY HOUSING
QUICK DISCONNECT
ORD E81563

Figure 2-18. Starter pulley components—exploded view.

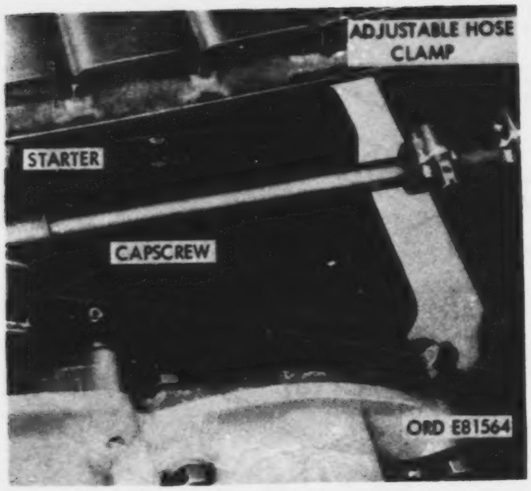


Figure 2-19. Location of starter.

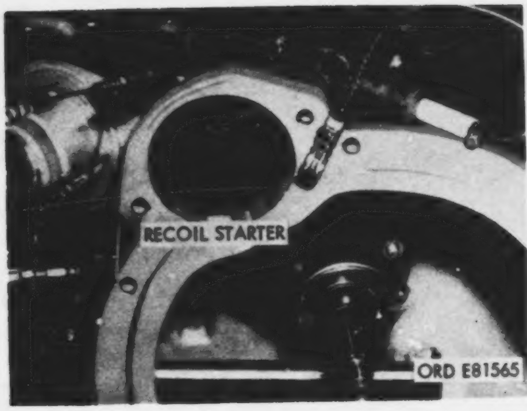


Figure 2-20. Removal or installation of recoil starter.

Section X. FUEL, AIR, AND EXHAUST SYSTEMS (VEHICLE PLATFORM)

2-28. General

The following paragraphs cover the description, removal, installation and servicing of the platform fuel, air, and exhaust systems.

Note. Refer to TM 5-2805-213-14 for the engine fuel, air, and exhaust systems.

2-29. Description and Data

a. Description.

(1) The fuel system includes the fuel tank (fig. 2-21), shutoff valves, filters, lines, pump, carburetor, air cleaner, rain deflector and precleaner, hose, and controls.

(2) The fuel tank is located at the left side of the vehicle under the platform and includes an impregnated paper filter. The fuel filter cap is equipped with a level gage and vent valve.

(3) Carburetor control is through flexible cable to the accelerator and hand throttle at the front of the vehicle.

(4) The air cleaner (fig. 2-1) is a dry-type cleaner having a replaceable element. Air enters the system through a rain deflector and air precleaner at the front of the vehicle, and passes through the left frame tube to the air cleaner.

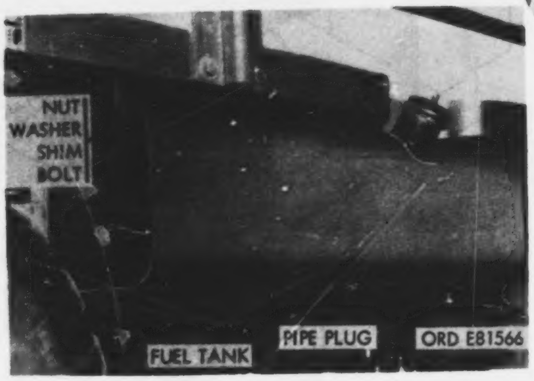


Figure 2-21. Location of pipe plug and flathead bolts.

b. Data.

Fuel tank capacity	8.5 gal
Fuel filler cap	Level gage and vent valve
Fuel tank filter:	
Make	Bendix

Manufacturer's number	045265
Type	Paper-impregnated
Air cleaner:	
Make	Dollinger
Manufacturer's number	OTR-1134-70
Type	Paper element dry-type

2-30. Fuel Tank and Screen

a. *Removal.*

(1) Remove hex-head pipe plug at bottom of fuel tank, to drain fuel (fig. 2-21).

(2) Disconnect fuel line at forward end of union (fig. 2-22) beneath platform near stowed tow bar. Remove nut, washer, screw, and clip, retaining fuel line to support bracket.

(3) Remove four nuts, plain washer, shims, and flathead bolts (fig. 2-21) securing fuel tank to platform.

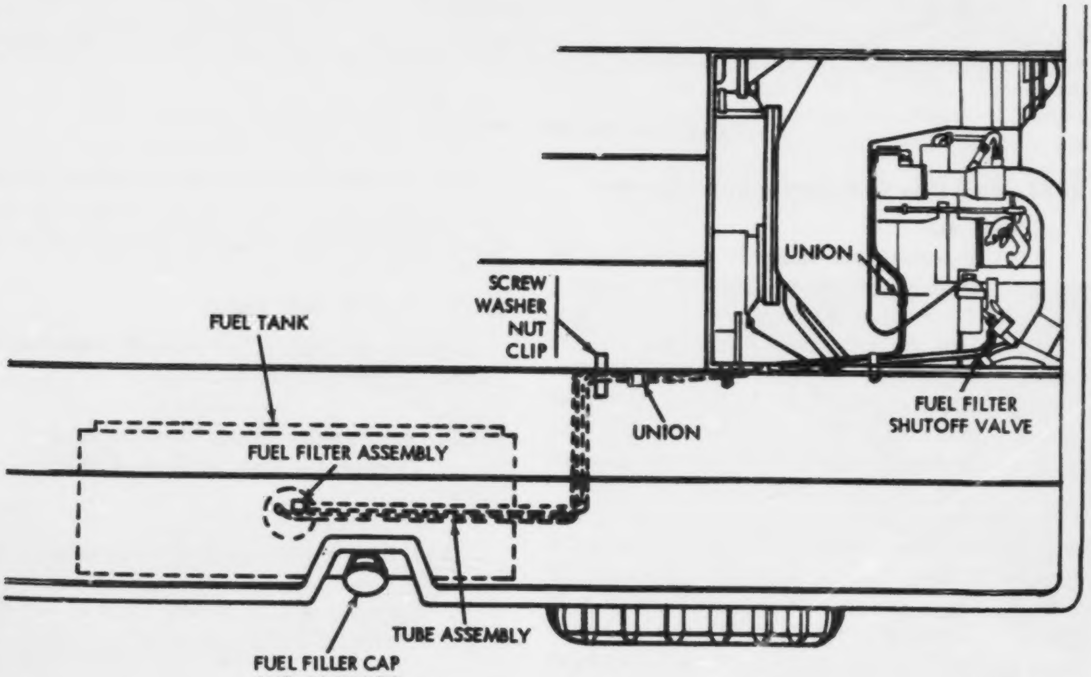
Note. Use deep socket to remove four nuts.

(4) Drop fuel tank approximately six inches, disconnect vapor return line at top of tank (fig. 2-22) and remove fuel tank.

(5) Remove eight panhead integral lockwasher screws (fig. 2-23) securing fuel screen to top of tank and remove screen and gasket.

(6) Remove hex nut (fig. 2-23) and lockwasher from long, round-headed machine screws securing filter element to outlet cover plate, and remove screw, end plate, and element from cover plate.

b. *Installation.* For installation of fuel tank and screen, reverse steps 1 through 6, paragraph 2-30*a*.


UNION
SCREW
WASHER
NUT
CLIP
FUEL TANK
UNION
FUEL FILTER SHUTOFF VALVE
FUEL FILTER ASSEMBLY
TUBE ASSEMBLY
FUEL FILLER CAP AND GAGE ROD

ORD E81577

Figure 2-22. Fuel line routing.

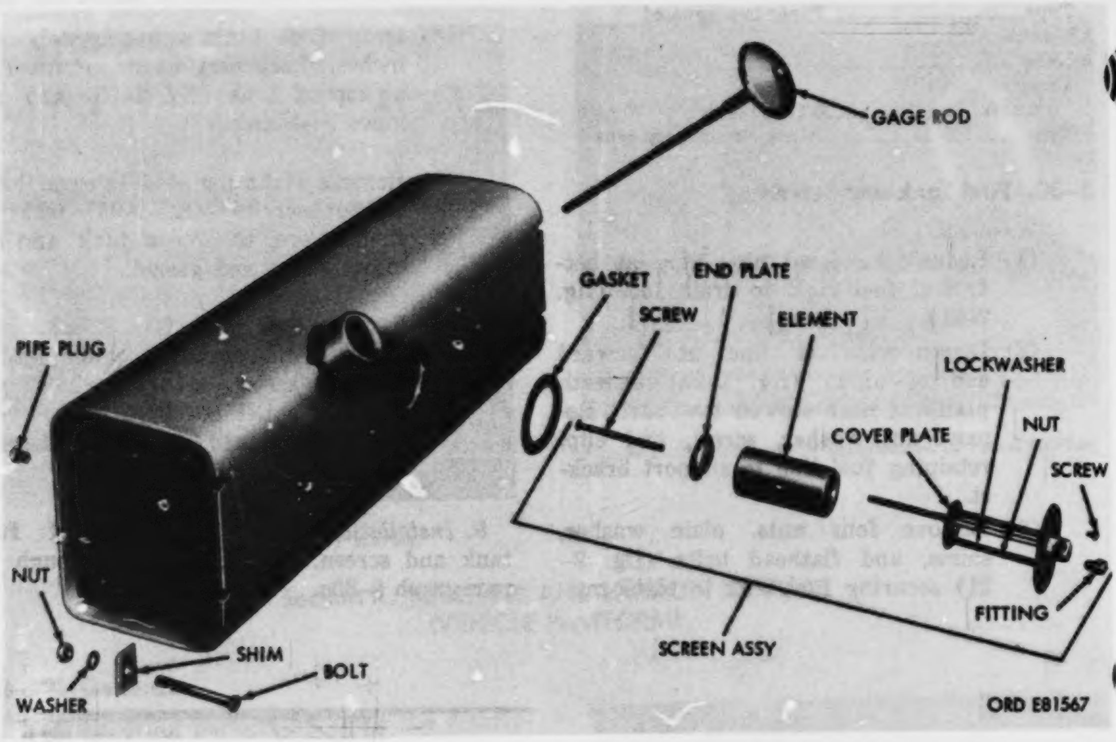


Figure 2-23. Fuel tank and screen—exploded view.

2-31. Fuel Line Replacement and Repair

a. Removal.

(1) Remove fuel tank to union line as directed in paragraph 2-30*a*(2).

(2) To remove union shutoff vaive line, remove retaining clip (par. 2-30*a* (2)). Unscrew nut connecting forward end of line to union. Unscrew line connecting rear end of fuel line to fuel shutoff valve, and remove line.

b. Repair. The lines are made from lengths of steel tubing, double-flared with fittings of the flare or inverted-flare type. If fittings are damaged, install new ones. If flares on ends of lines are damaged and tubing is of sufficient length, cut off damaged flare, install new nut and replace. If new tubing must be used, bend to proper shape, using old tube as a pattern. Cut to proper length, install new nuts and reflare.

Note. Use new fittings on new or reflared tubing.

c. Installation. For installation of fuel lines, reverse steps 1 and 2, paragraph 2-31*a*.

2-32. Fuel Shutoff Valve

Remove or install fuel shutoff valve as directed in paragraph 2-20*b*(7)*a*.

2-33. Accelerator, Hand Throttle, and Carburetor Control Front Cable

a. Removal.

(1) Disconnect quick-disconnect coupling between front and rear throttle control cables at forward end of coupling (fig. 2-24).

(2) Loosen screw clamp securing front end of throttle control wire to accelerator pedal and remove front control cable (fig. 2-24).

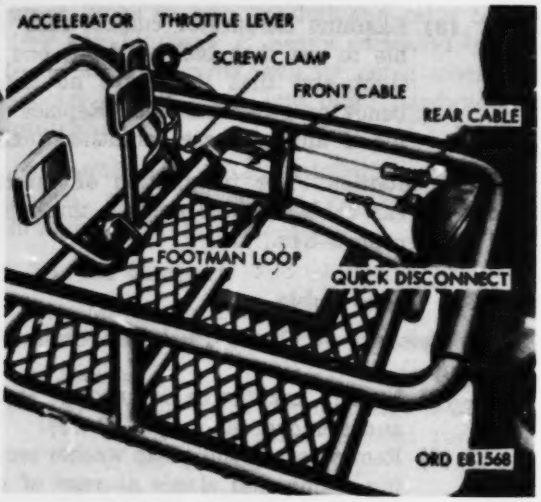

ACCELERATOR
THROTTLE LEVER
SCREW CLAMP
FRONT CABLE
REAR CABLE
FOOTMAN LOOP
QUICK DISCONNECT
ORD E81568

Figure 2-24. Location of front and rear throttle control cables.

(3) Remove cotter pin and plain washer from end of accelerator shaft (fig. 2-25); slide accelerator to the left, out of the hand throttle lever and footrest, and remove plain washer from accelerator shaft.

(4) Remove nut and friction spring from stud on hand throttle lever. Unscrew ball from lever (fig. 2-25) and remove lever from footrest.

b. Repair.

(1) Check to see that screw threads on hand throttle have not been damaged. If threads are damaged, either clean up with a die, or replace. If lever is bent, either straighten or replace.

(2) Check accelerator to see that it is not bent or damaged. If bent, either straighten or replace.

(3) Check to see that connector ball at rear of front throttle cable assembly is not loose. If ball is found loose, replace cable assembly.

c. Installation. Reverse steps 1 through 4, paragraph 2-33*a*, for installation of throttle accelerator and cable assembly front.

2-34. Carburetor Control Rear Cable

a. Removal.

(1) Remove engine access lid. Loosen four screws securing governor cover, and remove cover (fig. 2-26).

(2) Loosen screw in stop on end of throttle control cable and pull cable out of stop, governor lever, spring and gear cover flange (fig. 2-27).

(3) Loosen screw in stop under platform just rearward of second crossmember support (fig. 2-28). Disconnect quick-disconnect at front of vehicle between front and rear throttle control cables at rear of quick-disconnect (fig. 2-24).

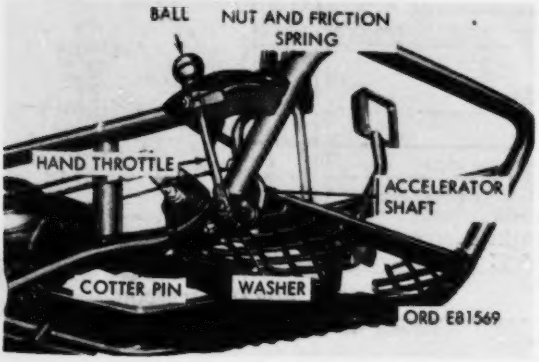

BALL
NUT AND FRICTION SPRING
HAND THROTTLE
ACCELERATOR SHAFT
COTTER PIN
WASHER
ORD E81569

Figure 2-25. Location of cotter pin, hand throttle, and accelerator shaft.

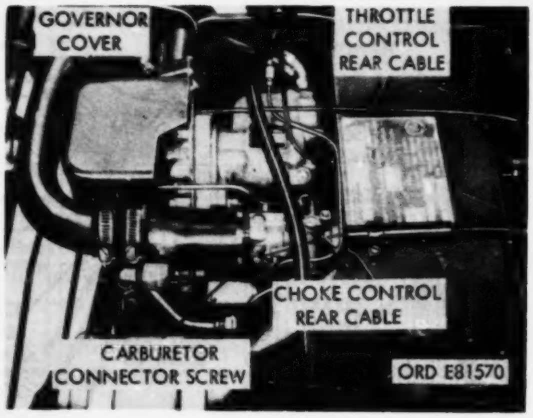

GOVERNOR COVER
THROTTLE CONTROL REAR CABLE
CHOKE CONTROL REAR CABLE
CARBURETOR CONNECTOR SCREW
ORD E81570

Figure 2-26. Location of governor cover, throttle and choke rear control cables.

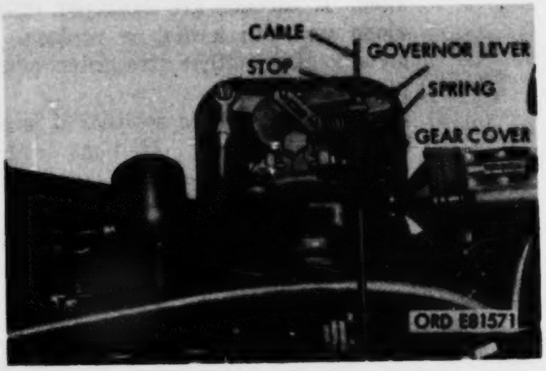

CABLE
STOP
GOVERNOR LEVER
SPRING
GEAR COVER
ORD E81571

Figure 2-27. Governor cover removed.

(4) Pull rear throttle cable from rear of vehicle through front crossmember bushing and clip, second crossmember bushing and clip, spring, stop, third crossmember bushing and clip, and conduits and clip on shroud. Refer to figure 2-28.

b. *Repair.*

(1) Examine threads of screws and stops. Replace if damaged.

(2) Examine wire conduit and bushings and replace if damaged.

(3) Examine carburetor control rear cable to see that ball on front end is tight, and that there are no shar bends or other damage. Replace ble if any of these conditions exi

c. *Installation.* For installation of throttle control rear cable, reverse steps 1 through 4 of paragraph 2-34*a*.

2-35. Choke Cable

a. *Removal of Choke Push-Pull Cable Assembly.*

(1) Loosen carburetor connector screw and remove cable (fig. 2-26).

(2) Remove screw and plain washer securing clamp and sleeve at rear of engine (fig. 2-28).

(3) Remove two clamps, screws, and plain washers securing cable to underside of platform (fig. 2-28).

(4) Remove with suitable tools two machine screws, flat washers, lockwashers, and nuts from front pl form (figs. 2-28 and 2-13).

b. *Repair.* Check choke cable in wire conduit to make sure it slides freely. Straighten

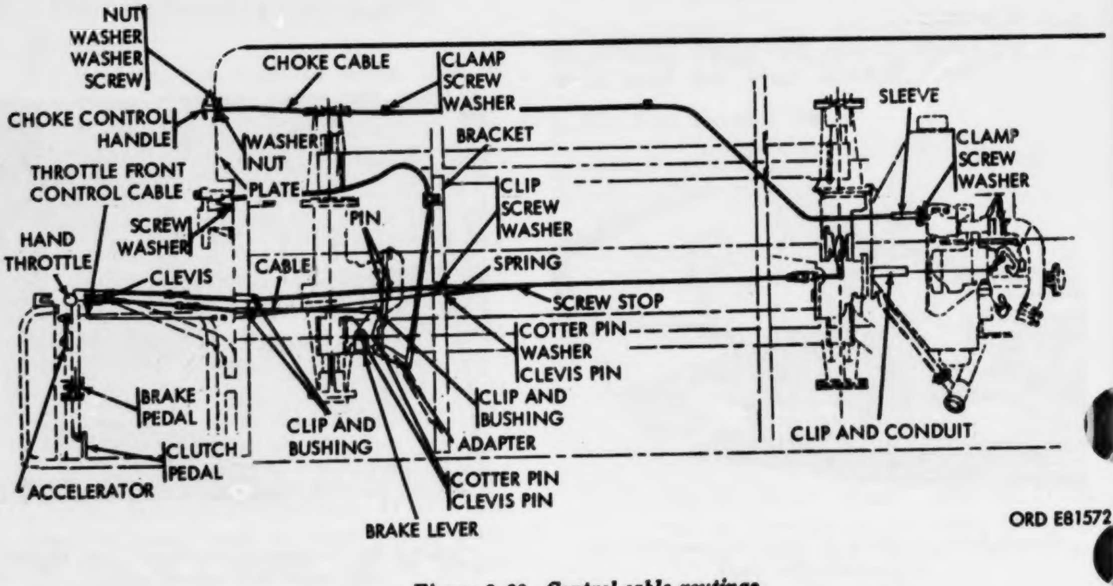

NUT
WASHER
WASHER
SCREW
CHOKE CONTROL HANDLE
THROTTLE FRONT CONTROL CABLE
HAND THROTTLE
SCREW
WASHER
CLEVIS
CHOKE CABLE
WASHER
NUT
PLATE
PIN
CABLE
CLAMP
SCREW
WASHER
BRACKET
CLIP
SCREW
WASHER
SPRING
SCREW STOP
COTTER PIN
WASHER
CLEVIS PIN
CLIP AND BUSHING
ADAPTER
COTTER PIN
CLEVIS PIN
BRAKE LEVER
CLIP AND BUSHING
BRAKE PEDAL
CLUTCH PEDAL
ACCELERATOR
SLEEVE
CLAMP
SCREW
WASHER
CLIP AND CONDUIT
ORD E81572

Figure 2-28. Control cable routings.

minor kinks in wire conduit and cable to relieve any binding. If heavy corrosion or extreme kinking exists, replace cable assembly. Replace screws, nuts, and other hardware as required.

c. Installation. For installation of choke control cable assembly, reverse steps 1 through 4, paragraph 2-35*a*.

2-36. Air Cleaner

Note. **Air cleaner filter element is supplied in a kit; the kit includes a filter element and a gasket.**

a. Service.

(1) Loosen three clamps (fig. 2-29) securing air cleaner element reservoir to air cleaner housing.

(2) Unhook clamps and remove reservoir filter element and gasket from top rim of reservoir (fig. 2-30).

(3) Thoroughly clean element reservoir (fig. 2-30), using drycleaning solvent or mineral spirits paint thinner. Replace element if extremely dirty.

(4) Position gasket on top rim of element reservoir. Position filter element inside of reservoir. Position reservoir, gasket, and filter element at bottom of housing (fig. 2-30).

(5) Hook ends of three clamps on rim of housing and snap to secure reservoir.

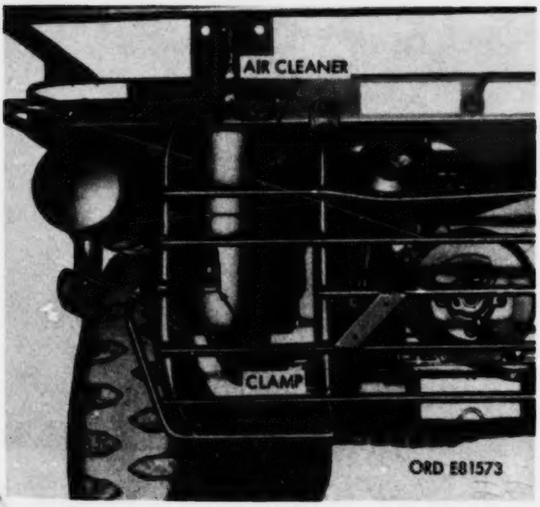


Figure 2-29. Location of air cleaner.

b. Removal.

(1) Remove air cleaner-to-carburetor adapter hose (ref TM 5-2805-213-14).

(2) Remove two plain nuts, lockwashers, and cross-recess machine screws securing arms on air cleaner housing to platform (fig. 2-31).

(3) Remove air cleaner assembly and two shims between the arms and platform (fig. 2-30).

c. Installation. To install air cleaner assembly, reverse sequence and steps in paragraph 2-36*b* (1 through 3).

2-37. Rain Deflector and Air Precleaner (Figure 2-32)

a. Removal. Loosen hose clamp securing rain deflector and air precleaner to mounting tube, and remove precleaner. Remove hose clamp from precleaner.

b. Service. Clean rain deflector and air precleaner thoroughly in a drycleaning solvent. Inspect screen for breaks and replace entire unit if necessary.

c. Installation. Reverse sequence of removal operations stated in *a* above.

2-38. Muffler

a. Removal. Loosen clamp connecting engine exhaust manifold-to-muffler (fig. 2-23). Unscrew four cross-recess screws securing muffler to underside of platform (fig. 2-31) and remove muffler and two insulators.

b. Installation. For installation of muffler, reverse procedure in paragraph 2-38*a*, above.

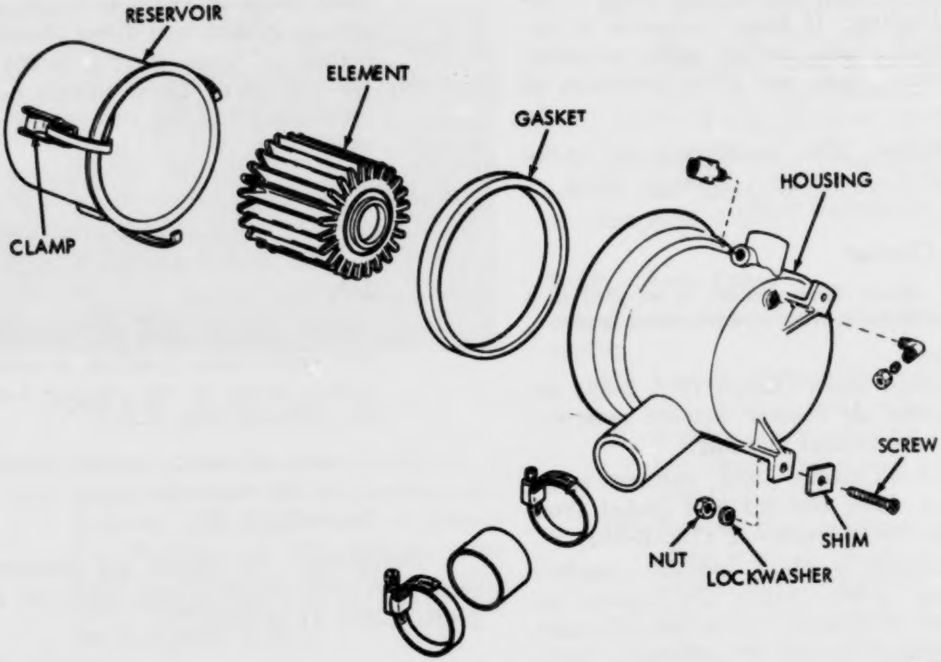

RESERVOIR
ELEMENT
GASKET
HOUSING
CLAMP
SCREW
SHIM
NUT
LOCKWASHER
ORD E81574

Figure 2-30. Air cleaner—exploded view.

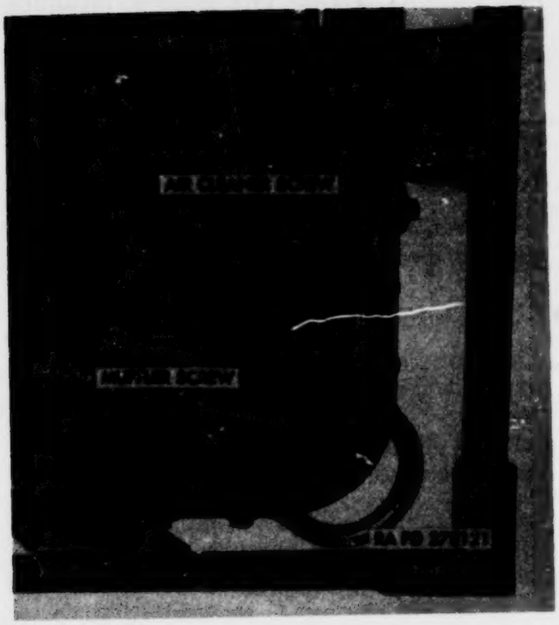

AIR CLEANER SCREW
MUFFLER SCREW

Figure 2-31. Location of screws for air cleaner and muffler.

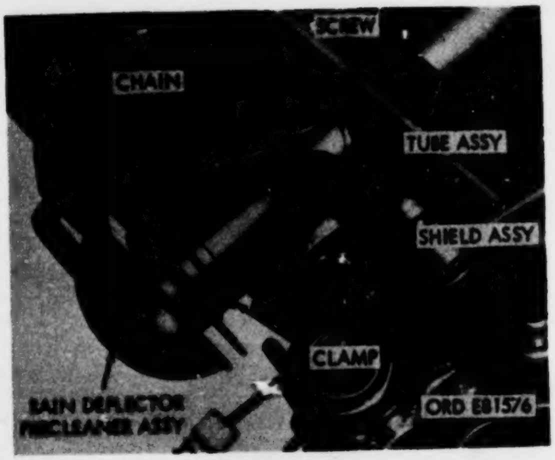

SCREW
CHAIN
TUBE ASSY
SHIELD ASSY
CLAMP
RAIN DEFLECTOR PRECLEANER ASSY
ORD E81576

Figure 2-32. Rain deflector and air precleaner.

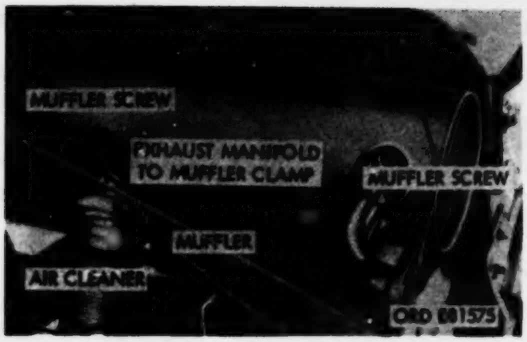


Figure 2-33. Exhaust manifold-to-muffler connection.

Section XI. ELECTRICAL SYSTEM (VEHICLE PLATFORM)

2-39. General

The following paragraphs cover the removal and installation of the vehicle electrical system components. For information pertaining to the engine electrical system, refer to TM 5-2805-213-14.

2-40. Ignition Switch

a. Removal. Pull switch to magneto cable out of socket "B" (fig. 2-34) and switch to ground cable out of socket "A" on rear of ignition switch (fig. 2-34). Remove machine screw and lockwasher securing switch handle to switch (fig. 2-35), and remove handle. Remove hexagon nut and lockwasher securing switch to front of platform, and pull switch out of crossmember.

b. Installation. Reverse procedure in paragraph 2-40*a* for installation of ignition switch.

2-41. Ignition Switch Cables

a. Ignition Switch-to-Magneto Cable—Removal. Pull connector on front end of cable out of upper socket "D" of ignition switch rear (fig. 2-34). Pull connector on rear end of cable out of socket on magneto at rear of vehicle on engine (fig. 2-36). Remove four clips securing cable to underside of platform (fig. 2-37) and remove cable.

b. Ignition Switch-to-Ground Cable—Removal. Pull connector on end of cable out of socket "C" on ignition switch (fig. 2-34). Remove nut and lockwasher and one clip holding cable to front bed support crossmember (fig. 2-37) and remove cable.

c. Installation. For installation of ignition switch-to-magneto cable and ignition switch-to-ground cable, reverse the sequence of operations in paragraph 2-41*a* and *b*.

Note. Make sure eyelet connection is clean and tight and that connectors are secure and seated in sockets.

2-42. Electric Hour Meter Assembly, and Installation and Replacement (Figure 2-38)

a. Assembly. Attach hour meter to hour meter mounting bracket, with three machine screws (supplied in kit).

b. Installation. Remove two bolts with assembled washers from right rear handrail support. Position electric hour meter bracket between platform and handrail support and replace two bolts with assembled washers. Plug base end of hour meter "Y" harness into socket on end of hour meter cable. Connect one "Y"-end of harness to magneto plug, and the other end of the "Y" harness to ignition

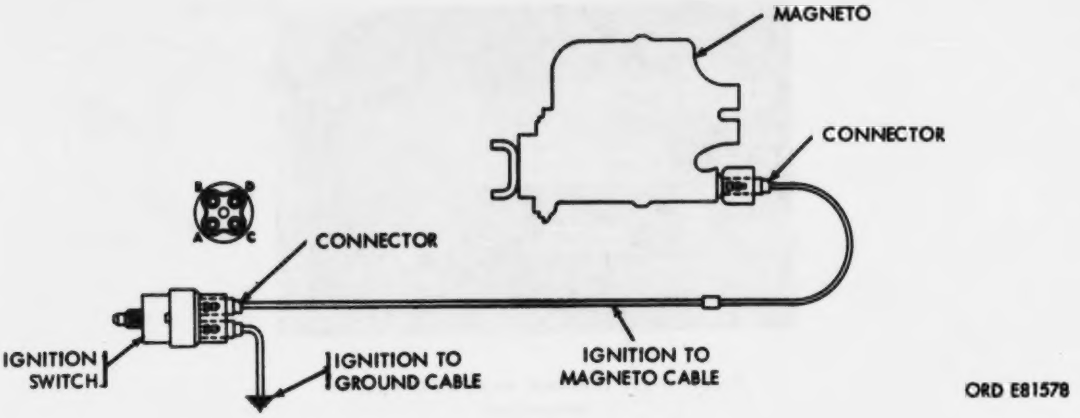

MAGNETO
CONNECTOR
B
D
A
C
CONNECTOR
IGNITION SWITCH
IGNITION TO GROUND CABLE
IGNITION TO MAGNETO CABLE
ORD E81578

Figure 2-34. Switch-magneto wiring.

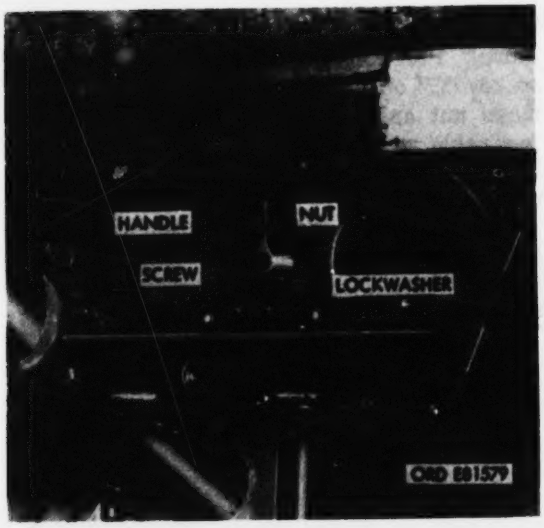

HANDLE
NUT
SCREW
LOCKWASHER
ORD E81579

Figure 2-35. Ignition switch.

cable plug. Secure wire to prevent damage by moving parts.

c. *Replacement.*

(1) If replacing an electric hour meter or electric hour meter wiring harness, remove and replace by reversing the procedures outlined in paragraph 2-42*b*.

(2) If replacing a mechanical hour meter with an electric hour meter -

MAGNETO
IGNITION TO MAGNETO CONNECTOR
ORD E81580

Figure 2-36. Ignition cable-to-magneto connector.

IGNITION TO MAGNETO CABLE
IGNITION
CLIP
ORD E81581

Figure 2-37. Location of ignition switch and cable.

(*a*) Assemble electric hour meter as stated in paragraph 2–42*a*.

(*b*) Refer to TM 5-2805-213-14 and remove mechanical hour meter, hour meter adapter and gear assembly. (Discard at will.)

(*c*) Install 5/8"—pipe plug (supplied in electric hour meter kit) in hole left by adapter.

(*d*) Install electric hour meter as outlined in paragraph 2–42*b*.

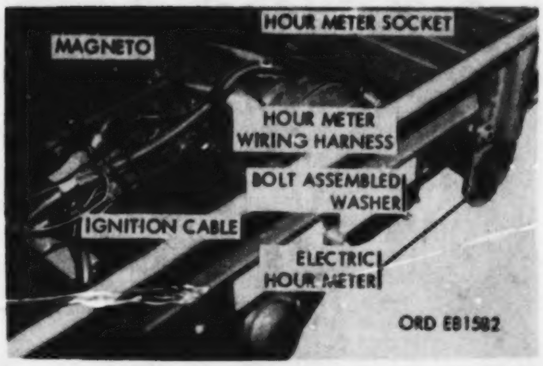


Figure 2–38. Location of electric hour meter and component parts.

Section XII. TRANSMISSION LINKAGE AND SHIFT LEVERS

2–43. General

The transmission is of the synchronized type and provides three speeds forward and one reverse as well as high and low ranges. This construction gives six speeds forward and two in reverse. The case housing the component parts of the transmission forms the center section of the rear axle.

2–44. Control Rod Rigid Linkage

a. Removal. Remove three cotter pins and clevis pins (fig. 2–39) securing control rod linkage to linkage hangers and three cotter pins at rear of control rods (fig. 2–40) securing clevis pins. Remove three clevis pins securing rear ends of transmission and transfer control rigid linkages to transmission. Remove safety pin (fig. 2–41) securing front end of transfer linkage to transfer gearshift range lever and remove linkage from lever. Remove two cotter pins (fig. 2–41) from studs in gearshift lever brackets, and pull front end of transmission control rod rigid linkage from studs. Pull linkage out through holes in front crossmember and remove from vehicle.

b. Installation. Slide "L"-shaped end of transfer control rod linkage through hole in front crossmember. Hook end into hole in gearshift range lever (fig. 2–41) and secure with safety pin. Slide eye ends of transmission control rod linkages through holes in front crossmember and install on studs of gearshift lever brackets. Secure with two safety pins. Loosen locknuts on clevises on rear end of control rods and adjust so that when attached (secure with clevis pins and cotter pins) to transmission shift rails, levers on front of platform will be in correct position. Install three 5/16-inch clevis pins and three 3/32-inch cotter pins, securing linkage to linkage hangers.

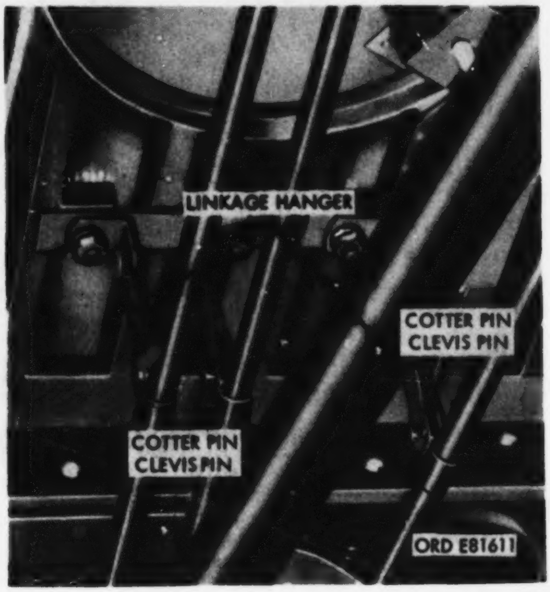


Figure 2–39. Transmission and transfer range control linkage hangers.

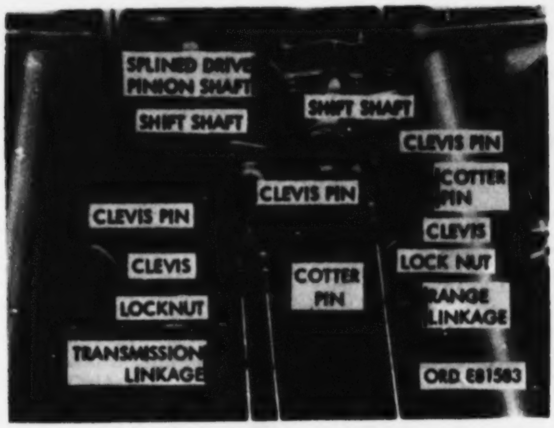

SPLINED DRIVE PINION SHAFT
SHIFT SHAFT
SHIFT SHAFT
CLEVIS PIN
COTTER PIN
CLEVIS PIN
CLEVIS PIN
CLEVIS
CLEVIS
LOCK NUT
COTTER PIN
LOCKNUT
RANGE LINKAGE
TRANSMISSION LINKAGE
ORD E81583

Figure 2-40. Rear end of transmission and transfer control rod linkage.

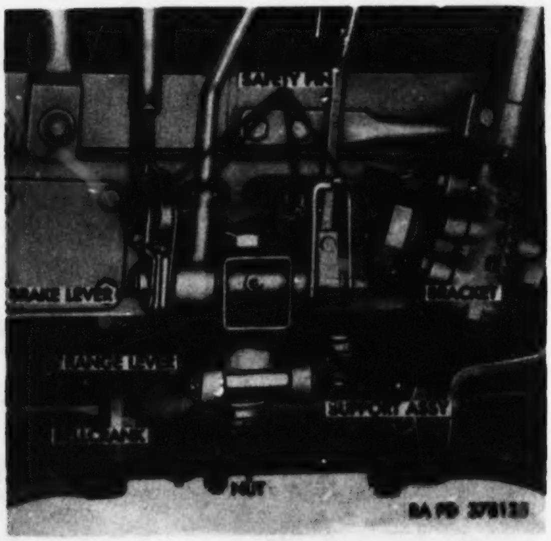

SAFETY PIN
BRAKE LEVER
BRACKET
RANGE LEVER
SUPPORT ASSY
BELLCRANK
NUT
RA PD 378123

Figure 2-41. Shift lever support assembly and attaching parts.

2-45. Brake and Shift Lever Support Assembly

a. Removal.

(1) Unscrew hex nut (fig. 2-42) securing tow bar bellcrank to brake and shift lever support, and remove hex nut and flat washer. Disconnect tow bar bellcrank from bolt.

(2) Remove safety pin (fig. 2-41) and clevis pin securing handbrake control flexible linkage to handbrake lever.

(3) Separate transfer and transmission linkage from shift levers (par. 2-44).

(4) Remove four locknuts and washers from bolts (fig. 2-42) securing brake and shift lever support to bed support front crossmember, and remove support assembly from vehicle. Three of the four attaching bolts can be removed from the lever support but the lower right bolt cannot be removed until the support is partially disassembled.

(5) Remove bolt, locknut and plain washer used to secure two bar bellcrank.

b. Disassembly (Figure 2-43).

(1) Remove hex-head screw (1) and lockwasher (2) securing sector to brake and shift lever support (8). Pull handbrake lever (3) and gearshift range lever (4) off shaft on right side of support (8). Remove fourth attaching bolt (19) securing support to crossmember. Unscrew ball (5) from end of lever.

(2) Remove ring (M274A3) or bolt (12) and plain washer (13) from end of shaft on left side of support and pull gearshift lever bracket (14), lever pivot block (17) with lever (10), and second bracket (9) off shaft in order named.

(3) Remove safety pin (16) and clevis pin (15) securing transmission gearshift lever (10) to gearshift lever pivot block (17), and separate lever and block. Unscrew ball (11) from top of gearshift lever.

(4) Remove lubricant fitting (18) from support, only if necessary.

c. Assembly. Reverse steps 1 through 4, paragraph 2-45*b*, for assembly of brake and shift lever support.

Note. Be sure to include lower right-hand attaching bolt (19) in assembly.

d. Installation. Reverse steps 1 through 5, paragraph 2-45*a*, for installation of brake and shift lever support. Tighten four attaching

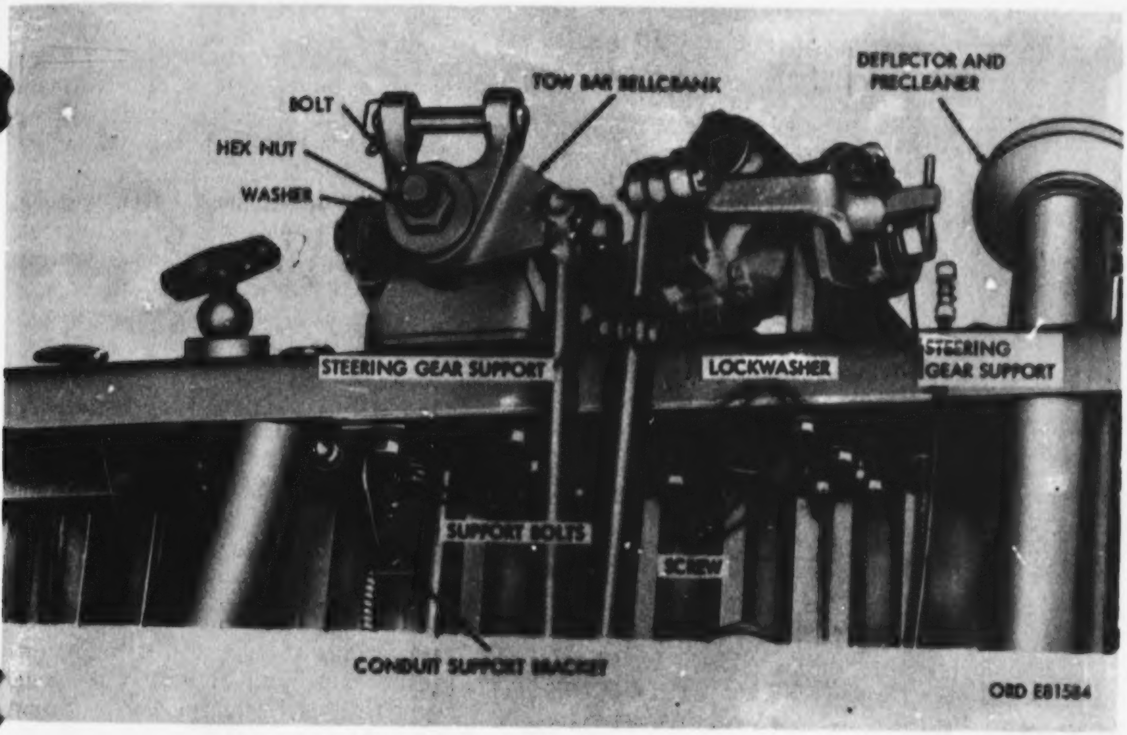
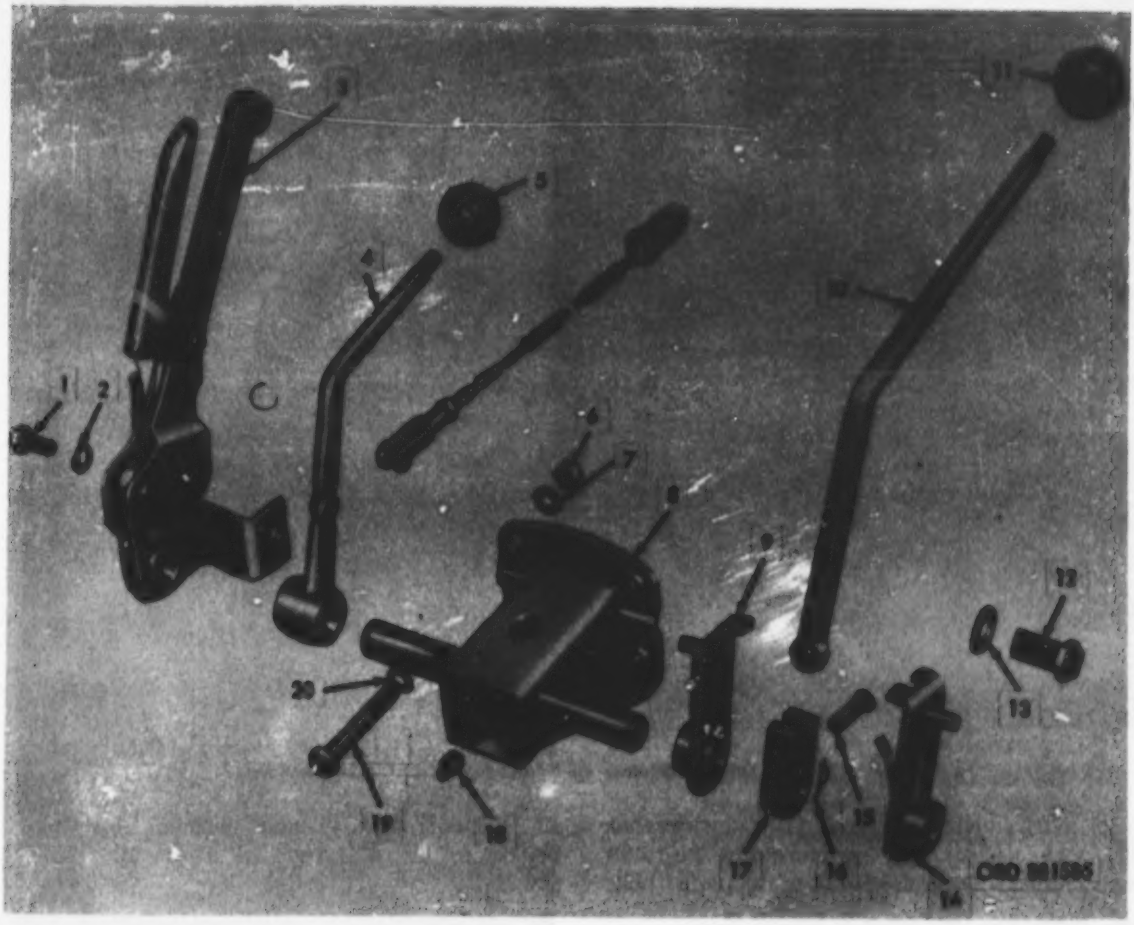

BOLT
HEX NUT
WASHER
TOW BAR BELLCRANK
DEFLECTOR AND PRECLEANER
STEERING GEAR SUPPORT
LOCKWASHER
STEERING GEAR SUPPORT
SUPPORT BOLTS
SCREW
CONDUIT SUPPORT BRACKET
ORD E81584

Figure 2-42. Disconnect-points on bed support front crossmember.

bolts (19), plain washers (20), lockwasher (7), and locknuts (6), to a torque of 20 to 30 foot-pounds. Tighten 5-1/2-inch plain bolt, flat washer, and locknut securing tow bar bellcrank, to a torque of 90 to 100 foot-pounds.



1—Hexagon head capscrew
2—Lockwasher
3—Handbrake lever
4—Gearshift range lever
5—Knob (range lever)
6—Self-locking nut
7—Lockwasher
8—Brake and shift lever support
9—Gearshift lever bracket
10—Gearshift lever

11—Knob (gearshift lever)
12—Ring—M274A8
Bolt—M274A2, M274A4, and 274A5
13—Flat washer
14—Gearshift lever bracket
15—Clevis pin
16—Cotter pin
17—Lever pivot bracket
18—Lubrication fitting
19—Hexagon head capscrew
20—Flat washer

Figure 2-43. Brake and shift lever support assembly—exploded view.

Section XIII. PROPELLER SHAFT

2-46. General

The propeller shaft (fig. 2-44) is tubular type with a universal joint at each end. The rear end of the shaft has a splined yoke which slides onto a splined shaft (fig. 2-40) in the transmission. The front end of the shaft has a companion flange which bolts to the rear end of the brakedrum.

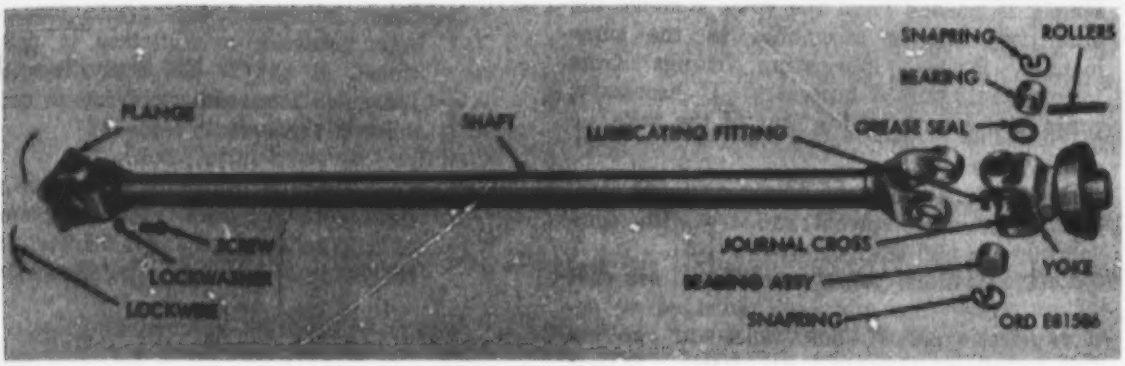

SNAPRING
ROLLERS
BEARING
FLANGE
SHAFT
LUBRICATING FITTING
GREASE SEAL
SCREW
LOCKWASHER
LOCKWIRE
JOURNAL CROSS
YOKE
BEARING ASSY
SNAPRING
ORD E81586

Figure 2-44. Propeller shaft and universal joint—partially exploded view.

2-47. Propeller Shaft

a. Removal. Remove two lockwires, four hex-head screws and lockwashers (fig. 2-45) securing front end of propeller shaft to brakedrum and front companion flange. Move front end of propeller shaft to clear brakedrum (fig. 2-46) and pull rear end of shaft off of drive pinion shaft of transmission (fig. 2-47). Be careful not to bur splines on shaft or yoke.

b. Installation. To install propeller shaft, reverse procedure of paragraph 2-47*a*, tightening screws to a torque of 10 to 15 foot-pounds.

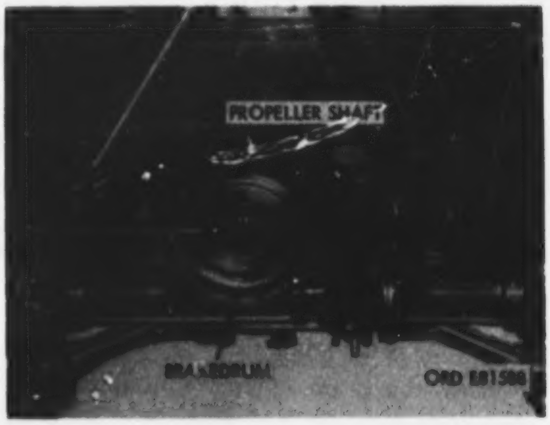

PROPELLER SHAFT
BRAKEDRUM
ORD E81588

Figure 2-46. Removing or installing propeller shaft.

2-48. Universal Joint (Figure 2-44)

a. Disassembly. Remove propeller shaft as directed in paragraph 2-47*a*. Remove two retaining snaprings securing the two bearings in the yoke at rear of propeller shaft. Press on the end of one bearing assembly until the opposite bearing assembly is pushed from the yoke. Turn yoke over and press on exposed

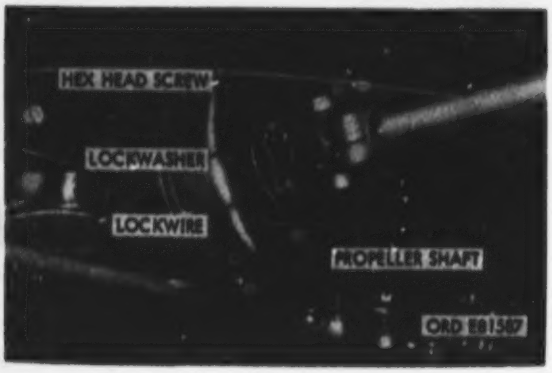

HEX HEAD SCREW
LOCKWASHER
LOCKWIRE
PROPELLER SHAFT
ORD E81587

Figure 2-45. Propeller shaft—front end.

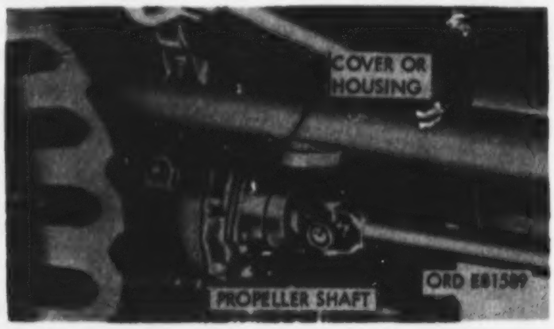

COVER OR HOUSING
PROPELLER SHAFT
ORD E81589

Figure 2-47. Propeller shaft—rear end.

end of journal cross until second bearing assembly is pushed from the yoke. Remove the other two bearing assemblies in the same manner. Remove lubricating fittings from journal cross only if necessary. If necessary, press dust guard off the rear of the yoke.

b. Repair.

(1) Clean all parts thoroughly with drycleaning solvent and dry with compressed air.

(2) Examine yokes carefully to see that they have not been damaged or destroyed. If bolt holes or splines show damage or wear, replace flange. If bearing bores show distortion, replace entire unit affected.

(3) If bearing surfaces of bearings, journal cross, or rollers, show damage or wear, replace entire journal cross and bearing assemblies.

(4) Check the tubular shaft and replace if bent or dented sufficiently to throw it out of line.

c. Assembly.

(1) Screw lubricating fitting into journal cross, making sure fitting is positioned at 45° to the centerlines o journals. Press dust guard onto rear yoke if removed.

(2) Coat inside of bearing with a layer of GAA automotive and artillery grease to hold rollers in place and install 20 rollers into bearing. Install grease seal on end of bearing.

(3) Position journal cross between arms of yoke and carefully press two bearing assemblies into yoke and onto journals, being careful not to damage grease seals or rollers. Install snapring in annular groove in yoke bore at outer end of each bearing. Install two bearings in other yoke, in same manner. Assemble second universal joint in the same manner.

Section XIV. FRONT AXLE

2-49. General

The front axle assembly is bolted directly between the center tubular frame members and front support tubes supporting the front end of the platform. The axle incorporates no differential, conducting torque from the driven gear to the wheels through a spare gear reduction and universal joint at each end of the axle. The steering arms are integral with the steering knuckles. Bearings for the steering and front bellcranks are incorporated in the gear carrier assembly. Lubricant capacity of bevel gears and universal joints is six ounces. Lubricant capacity for drop gears is 12 ounces per joint.

Note. Coordinate with direct- and general support-maintenance personnel for removal of front axle.

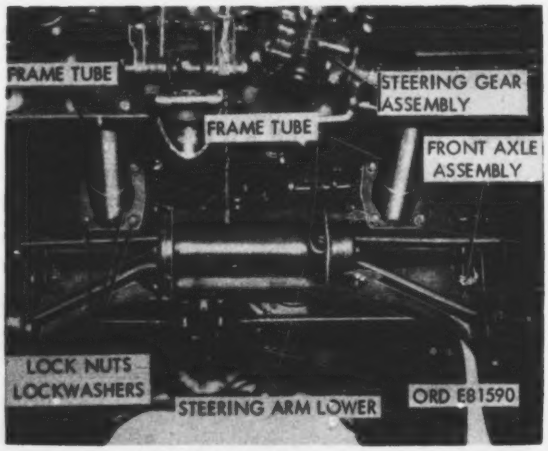


Figure 2-48. Front axle installed in vehicle.

2-50. Front Axle

a. Removal.

(1) Remove steering column and wheel assembly (fig. 2-49) by loosening two hex nuts on U-bolt clamp at bas of steering column, and loosening steering column brace-locking knob. Remove safety pin and clevis pin from handbrake lever. Remove operator's seat and seat back.

(2) Turn vehicle upside down using steps (*a*) through (*d*) below, and support on suitable blocking (ref LO 9-2320-246-12).

(*a*) Close vent on fuel tank cap.

(*b*) Close fuel shutoff valve.

(*c*) Close primer pump line valve if applicable.

(*d*) Turn over by lifting from left-hand or operator's side of vehicle.

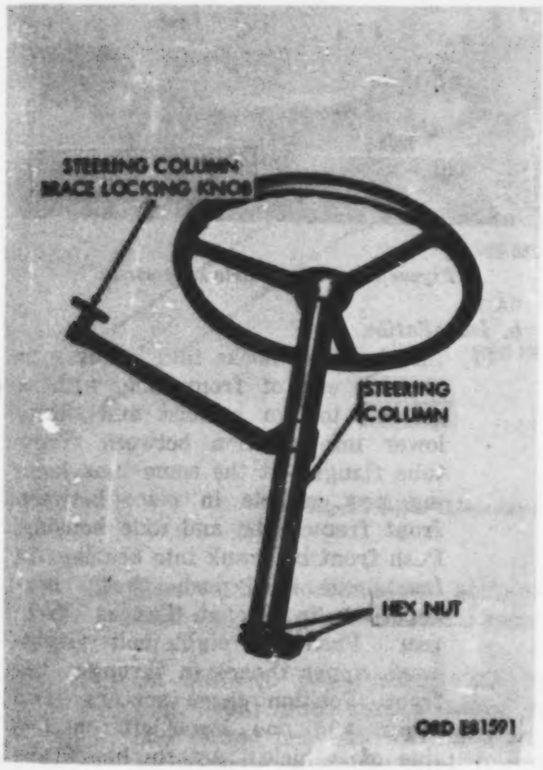

STEERING COLUMN BRACE LOCKING KNOB
STEERING COLUMN
HEX NUT
ORD E81591

Figure 2-49. Steering column and wheel removed.

(3) Remove five self-locking nuts and aluminum washers securing each front wheel to hub, and remove the front wheels.

(4) Remove front end of propeller shaft (par. 2-47*a*).

(5) Remove two cotter pins and hex nuts securing outer end of tie rods (fig. 2-50) to arms on steering knuckles and remove tie rod ends from arms. Remove cotter pin, slotted nut, and flat washer (fig. 2-51) securing bellcrank lower arm. Pull arm with tie rods off bellcrank and remove retaining snapring and special washer from bellcrank. Be careful not to damage serrations on bellcrank or arm.

(6) Unhook brake return spring (fig. 2-52) from brake lever adapter. Remove cotter pin, flat washer, and clevis pin securing handbrake flexible linkage to brake lever assembly. Remove cotter pin and clevis pin securing brake lever assembly rear linkage to brake lever.

(7) Remove eight locknuts, and lockwashers (fig. 2-48) from bolts securing front axle between flanges of

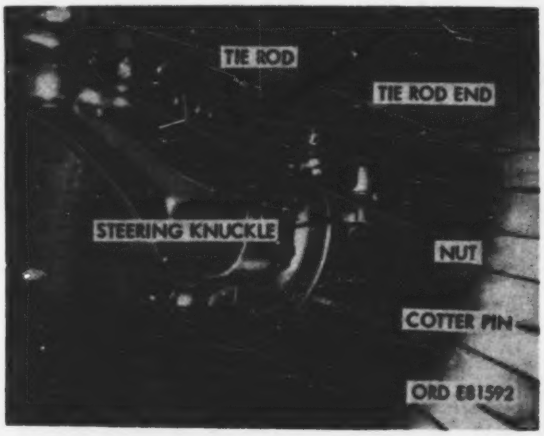

TIE ROD
TIE ROD END
STEERING KNUCKLE
NUT
COTTER PIN
ORD E81592

Figure 2-50. Tie rod and steering knuckle.

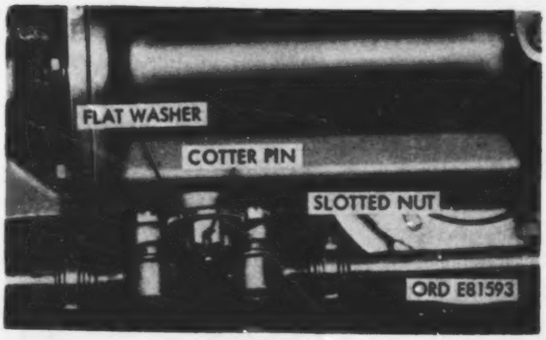

FLAT WASHER
COTTER PIN
SLOTTED NUT
ORD E81593

Figure 2-51. Front bellcrank, lower arm and tie rod ends.

frame tubes. Remove handbrake flexible linkage lever support bracket (fig. 2-53) and three spacers from two upper bolts and one lower bolt on left side. Support axle with a suitable tool or a hoist as shown in figure 2-54. Remove eight bolts from flanges and axle, and lift away from frame, while pushing front bellcrank out of bearings in front axle. Remove and discard gaskets installed between axle housing and frame tube front support.

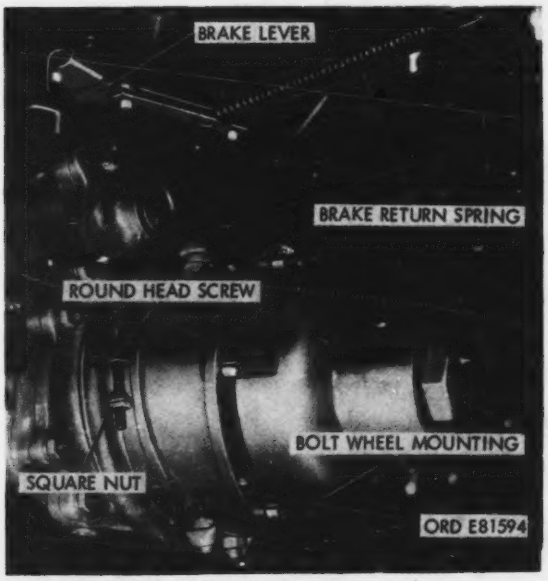

BRAKE LEVER
BRAKE RETURN SPRING
ROUND HEAD SCREW
BOLT WHEEL MOUNTING
SQUARE NUT
ORD E81594

Figure 2-52. Brake return spring.

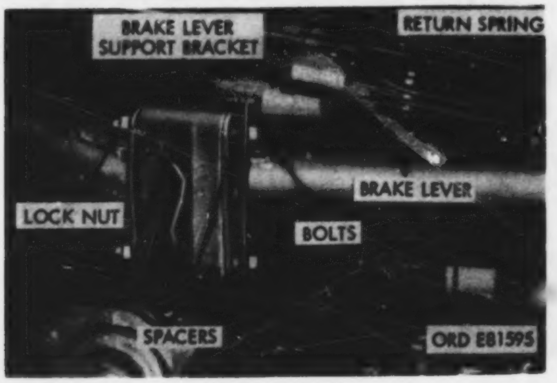

BRAKE LEVER SUPPORT BRACKET
RETURN SPRING
BRAKE LEVER
LOCK NUT
BOLTS
SPACERS
ORD E81595

Figure 2-53. Handbrake flexible linkage lever support bracket.

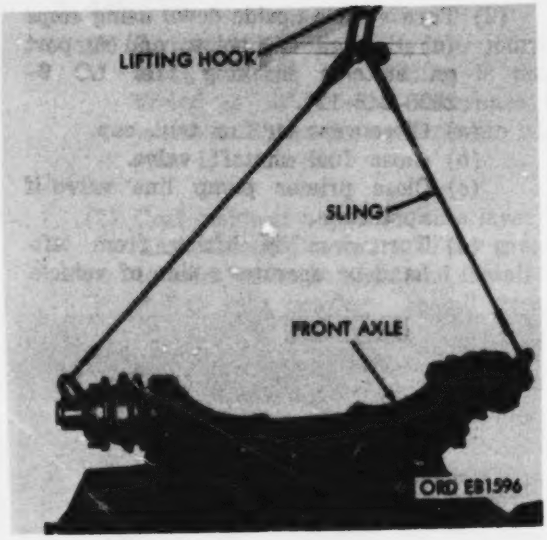

LIFTING HOOK
SLING
FRONT AXLE
ORD E81596

Figure 2-54. Front axle supported.

b. *Installation.*

(1) Insert lifting hooks into lifting eyes at each end of front axle, with a suitable tool or a hoist and slowly lower into position between frame tube flanges, at the same time holding new gaskets in place between front frame tube and axle housing. Push front bellcrank into bearings in front axle and push seven hex-headed bolts through flanges from rear. Push the eight bolt (right-hand, upper inner) in through the front. Position three spacers, two upper and one lower-left on left side of vehicle. Attach handbrake linkage lever support bracket next to three spacers, and install eight lockwashers and locknuts (fig. 2-55). Position lower bellcrank on bellcrank and install plain washer, slotted hex-nut and cotter key.

(2) Reverse steps 1 through 7, paragraph 2-50*a*.

2-51. Boot, Universal Joint, Wheel Hub, and Steering Knuckle

a. *Removal.*

(1) Turn vehicle over (para. 2-50*a*(1) and (2)).

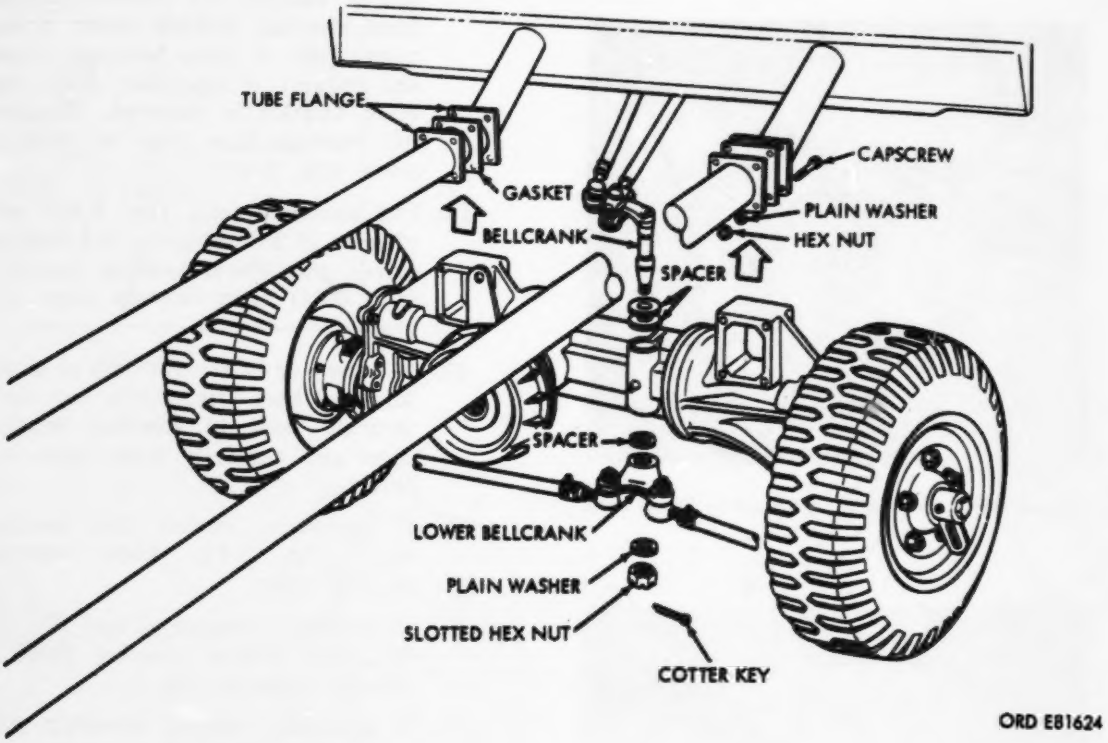

TUBE FLANGE
CAPSCREW
GASKET
PLAIN WASHER
BELLCRANK
HEX NUT
SPACER
SPACER
LOWER BELLCRANK
PLAIN WASHER
SLOTTED HEX NUT
COTTER KEY
ORD E81624

Figure 2-55. Alinement of bellcrank lower arm to bellcrank.

(2) Remove five locknuts and aluminum washers from studs, and remove wheel.

(3) On M274A3 pry hubcap off hub (fig. 2-56) and remove cotter pin and slotted hex nut. On other models, remove two pipe plugs (fig. 2-57) from lifting hook.

(4) Rotate lifting hook until end of spring pin, which secures hub retainer nut, is alined with pipe plug hole in lifting hook; remove spring pin as shown in figure 2-58, and remove hub retainer nut and lifting hook (fig. 2-59); remove preformed packing from hub retainer nut.

(5) Remove cotter pin and slotted nut securing tie rod end (fig. 2-50) to arm on steering knuckle, and drive rod end out of arm.

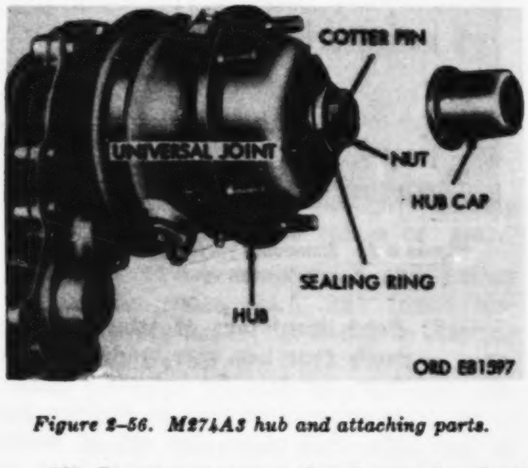

COTTER PIN
UNIVERSAL JOINT
NUT
HUB CAP
SEALING RING
HUB
ORD E81597

Figure 2-56. M274A3 hub and attaching parts.

(6) Remove screw and nut securing boot clamp, (fig. 2-62) and remove clamp from boot.

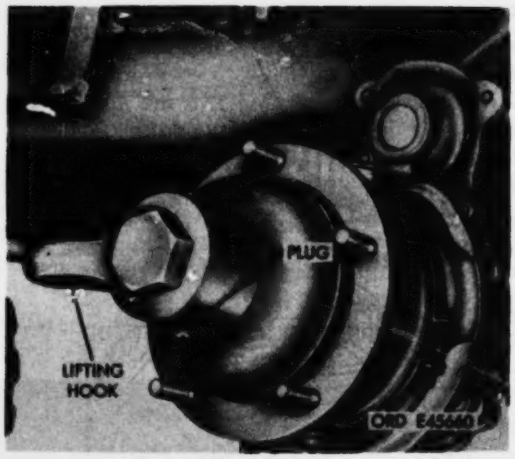


Figure 2-57. Location of pipe plugs on lifting hook.

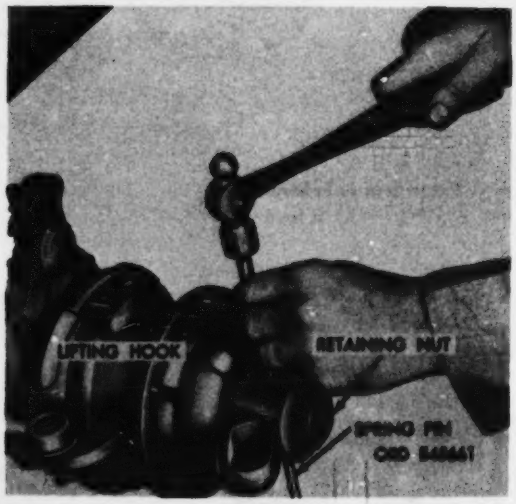


Figure 2-58. Removing spring pin securing hub retainer nut.

(7) Bend down tabs of tabwashers, remove four hex nuts, and tabwashers from studs (fig. 2-60) securing steering pivot pins in steering knuckle. Pull pivot pins out of steering knuckles, being careful to keep each set of shims with the pins on which they were originally installed. Slip outer end of steering boot off inner end of knuckle and remove knuckle from steering knuckle cover, being careful not to drop bearings (cone and rollers) which may drop out when knuckle is removed. Remove two bearings from cups in knuckle cover (fig. 2-61).

(8) Pull universal joint (fig. 2-61) out of gear in axle housing and remove driven gear sleeve bearing (spacer) (fig. 2-62) from between joint and gear.

(9) If necessary to remove dust or moisture seal boot (fig. 2-62), cut wire securing boot to steering knuckle cover and carefully work boot off cover.

(10) If necessary, remove two bearing cups (fig. 2-61) from steering knuckle cover.

(11) If necessary, remove oil seal (fig. 2-63) from outside steering knuckle, using a suitable tool.

(12) If necessary, remove retaining ring securing bearing. Remove bearing and oil seal from knuckle, using suitable tools (fig. 2-63).

b. Repair.

(1) Examine steering knuckle for cracks or distortions and replace knuckle if any are found.

(2) Examine threads for damage; if damaged, either rethread or replace knuckle.

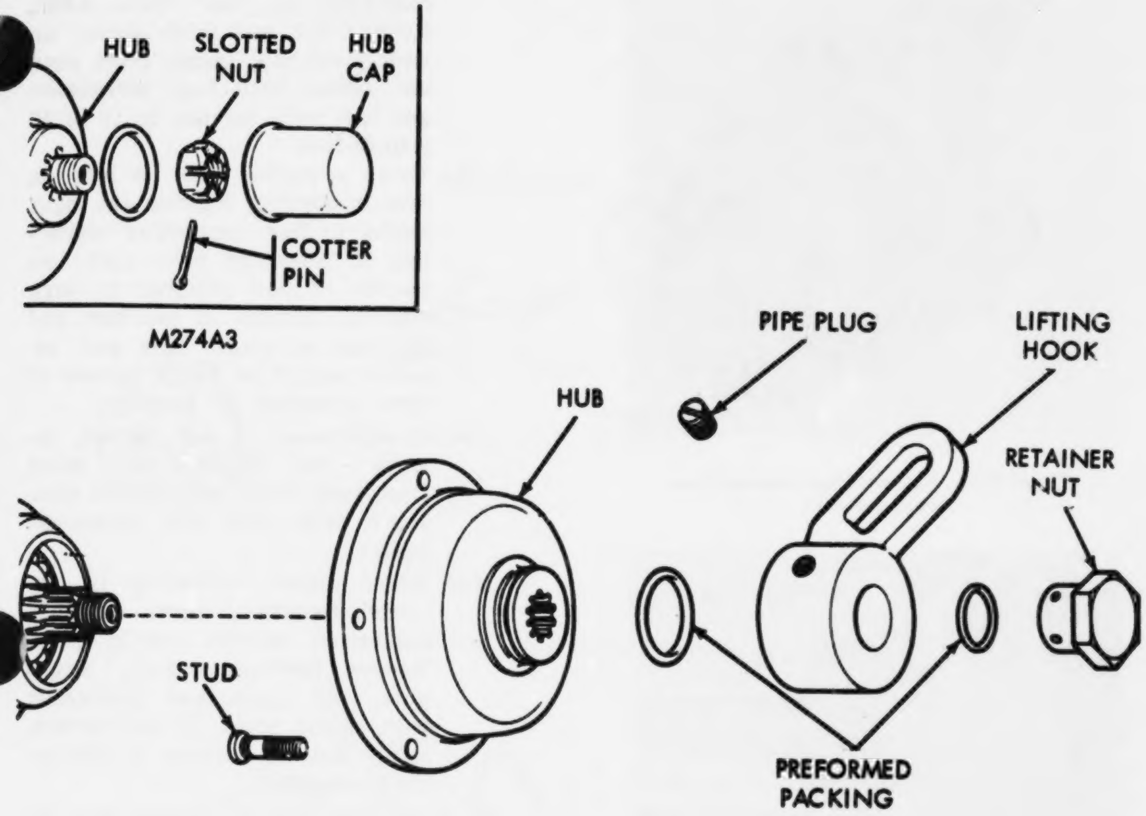
(3) Remove any burs found on corners of machined surfaces, with a fine file.

(4) Clean and examine bearings. Replace if defective.

c. Installation (Figure 2-62).

(1) If bearing was removed, position clean or new and lubricated bearing, and press into bore from inside until seated against shoulder.

(2) If the bearing cups were removed from steering knuckle cover, press



ORD E81598

Figure 2–59. Hub retainer nut, performed packing, and lifting hook—exploded view.

cups, small bore first, into cover until seated against shoulders.

(3) If dust and moisture seal boot was removed, work boot onto steering knuckle cover, large end first, and position a length of locking wire around boot; twist ends to secure boot to cover.

Note. After twisting wire, drive ends down close to boot so that ends of wire will not puncture boot when knuckle is turned after assembly.

(4) Position driven gear bearing (spacer) in axle housing and push universal joint through bearing (spacer) and into spines of gear.

(5) Fill two bearing cones and rollers with grease, GAA, and insert into bearing cups (fig. 2–61) in steering knuckle cover. Slide steering knuckle (with steering arm to rear) into universal joint, being careful not to knock the cones and rollers out of the cups. If no new bearing parts are being used, position steering pivot pins in steering knuckles and bearing cones, using the same shims

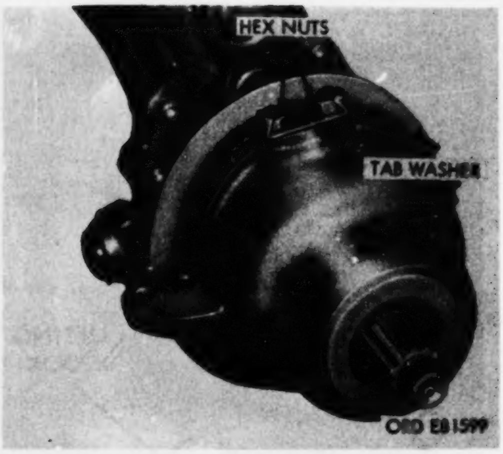


Figure 2-60. Axle with hub removed from universal joint.

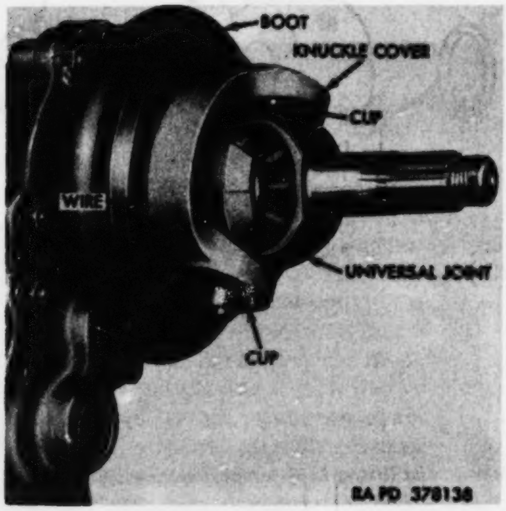


Figure 2-61. End of axle with steering knuckle removed.

between pivot pins and knuckle as were removed at disassembly. Install four tabwashers, and on studs and hex nuts, tighten to a torque of 10 to 15 pounds-foot. If new bearing parts are used, the shims installed between the two pivot pins and the steering knuckle covers should be equal in thickness. Test adjustment as directed in (*b*) below.

(*a*) Install a complete set of shims, consisting of one each 0.003, 0.005, 0.010, and 0.030 shims, on each pivot pin; install pivot pins and secure with four tabwashers and hex nuts, torqued to 10 to 15 pounds-foot.

(*b*) Using a spring scale in hole in arm in steering knuckle (at right angles to line connecting centerline of holes and pivot pin), test pounds of pull required to turn steering knuckle on bearings and hex nuts on studs. The pull required should be 3-1/2 pounds at first movement of knuckle.

(*c*) If adjustment is not correct, remove equal amounts of shims from both pivot pins, install pins, secure with nuts, and torque-test again.

(*d*) When correct shimming is obtained, remove all parts, clean in authorized mineral spirits paint thinner, lubricate, install, torque nuts, and again test preloading with spring scale. If still correct, secure nuts by turning up tabs on the tabwashers.

(6) Work outer end of steering boot into groove on inner end of steering knuckle. Position steering boot clamp on outer end of boot and secure by tightening roundhead screw and square nut.

(7) With dust cover installed on stud in steering tie rod end, push stud into hole in arm on steering knuckle from the top; secure with slotted hex nut and cotter pin.

(8) Install preformed packing into annular groove in wheel hub.

(9) Push wheel hub into splines on axle or universal joint shaft. Secure wheel hub on M274A3, with slotted hex nut and a cotter pin. Secure wheel hub on other models by using lifting hook and hub retainer nut. Use new preformed packing on hub retainer nut before installation. Tighten hub retainer nut, then back

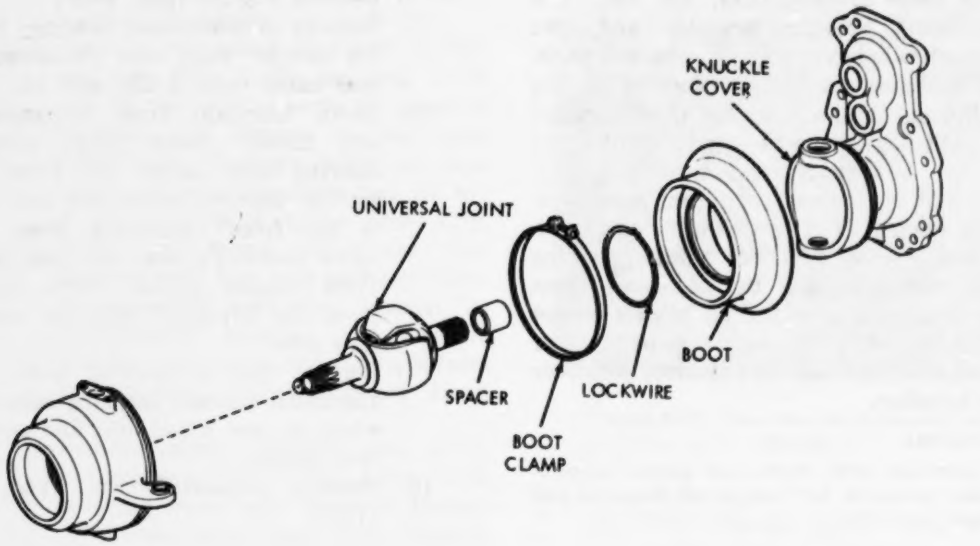

KNUCKLE COVER
UNIVERSAL JOINT
BOOT
SPACER
LOCKWIRE
BOOT CLAMP
ORD E81600

Figure 2-62. Steering knuckle—exploded view.

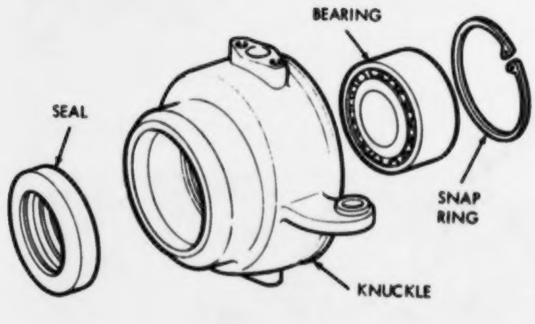

BEARING
SEAL
SNAP RING
KNUCKLE
ORD E81601

Figure 2-63. Outside steering knuckle—exploded view.

it off so that slot in nut alines with pinholes in axle or universal joint shaft. Install spring pin so end of pin is flush with flat of hub retainer nut. Install two pipe plugs in holes of lifting hook.

(10) On M274A3, press hub cap onto hub.

(11) Position wheel on wheel hub and secure with five plain washers and locknuts. Tighten to torque of 20 to 30 pounds-foot.

(12) Return vehicle to the upright position and reverse procedures in paragraph 2-50*a*(2)(*a*) through 2-50*a*(2)(*d*.)

Section XV. REAR AXLE AND TRANSMISSION ASSEMBLY

2-52. Rear Axle and Transmission Assembly

a. General. The rear axle and transmission assembly (fig. 2-64) is bolted directly between the center tubular frame members connecting it to the front axle, and the rear tubular frame members, supporting the rear end of the platform. The assembly consists primarily of three subassemblies; the rear axle (transmission) housing assembly and two (drop gear) axle housings with attached parts. The transmission assembly is located in the rear axle housing assembly, has three forward speeds and one reverse speed with two ranges, and a lubricant capacity of 2 quarts. the lubricant capacity of each drop gear housing is 12 ounces. The two axle housings universal joint covers, universal joints, steering knuckles, and hubs, are the same as those used on the front axle for all models except the M274A5, which has a solid rear outer axle, and housing with no universal joints or steering knuckles.

b. Removal.

Note. Coordinate with direct- and general support-maintenance personnel for removal of rear axle and transmission assembly.

(1) Remove engine (par. 2-17).

(2) Remove clutch-release bearing, bearing carrier yoke, and clutch-control rear cable (par. 2-23*a* and *b*).

(3) Drain lubricant from transmission and install drain plug. Remove steering mast jacket and wheel assembly. Remove safety pin and clevis pin from handbrake lever. Remove operator's seat and seat back. Turn vehicle upside down, lifting from the left-hand side, or operator's side.

(4) Remove five self-locking nuts, and aluminum washers securing each rear wheel to rear wheel hub, and remove rear wheels.

(5) Remove propeller shaft (par. 2-47*a*).

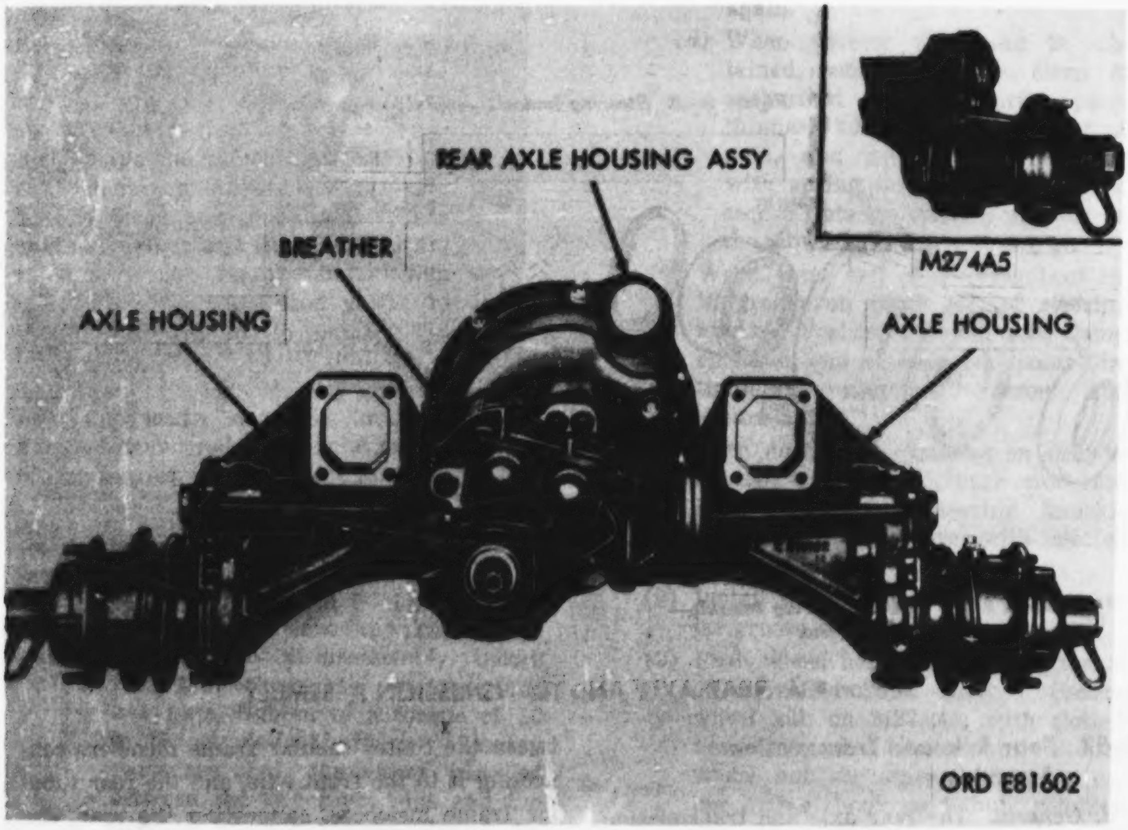


Figure 2-64. Rear axle and transmission assembly (M274A2, M274A3 and M274A4).

(6) Remove transmission and transfer control rod linkage (par. 2–44*a*).

(7) Remove two cotter pins and slotted hex nuts (fig. 2–65) securing outer end of tie rods to arms of steering knuckles and remove tie rod ends from arms. Remove cotter pin and clevis pin securing connecting tie rod to rear bellcrank upper arm (fig. 2–66), and swing rod to one side. Remove four hex nuts and lockwashers securing bellcrank bracket to transmission housing, and remove bracket, bellcrank, and tie rods from transmission, without further disassembly.

(8) Remove eight locknuts and seven lockwashers (fig. 2–66) from bolts securing rear axle between flanges of frame tubes and rear support tubes. Remove bolt from upper right, right-hand side of vehicle, which passes through axle and two flanges. The bolt is screwed into starter rope pulley housing. Support axle with hoist; remove remaining seven bolts, and lift axle away from vehicle frame. Remove gaskets installed between frame tube flanges and axle on left side.

Note. Step 7 is not applicable to the M274A5.

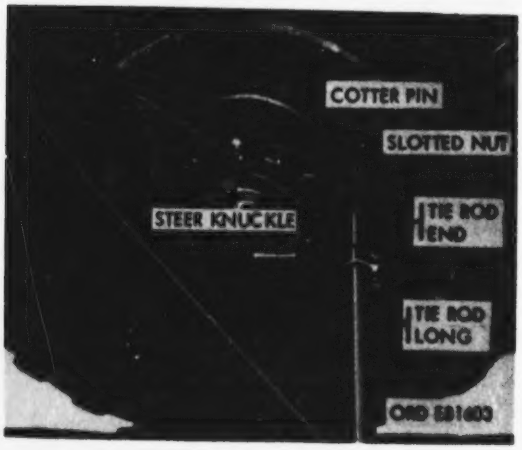


Figure 2–65. Tie rod and steering knuckle on rear axle.

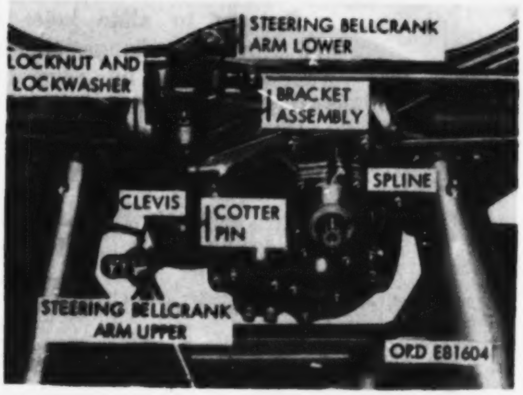


Figure 2–66. Rear steering bellcrank (except M274A5).

c. Installation.

(1) With vehicle turned upside down, insert lifting hooks into lifting eyes at each end of axle and raise axle assembly with a hoist; carefully lower into position between frame tube flanges and rear support tubes. Install new gaskets between flanges on left frame tubes and axle. Push eight bolts through flanges on frame tube, rear axle, and flanges on rear bed support. Screw upper-right outside bolt into starter rope pulley housing, and secure locknut. Install lockwashers and self-locking nut on remaining seven bolts.

(2) On all models except the M274A5 vehicle, position rear bellcrank bracket (fig. 2–66) with bellcrank and attach the tie rods on studs on transmission housing, and secure with four lockwashers and hex nuts. Position rear end of steering connecting rod on rear bellcrank upper arm and secure with clevis pin and cotter pin (fig. 2–66). Insert outer ends of rods in holes in arms in steering knuckles, and secure each with slotted hex nut and cotter pin.

(3) Install three clevis pins and cotter pins to secure transmission and range-control rod linkage to rods of transmission (fig. 2–40).

(4) Turn brakedrum to aline holes in drum and companion flange, and install propeller shaft by reversing procedure in paragraph 2–47*a*.

(5) Position two rear wheels with tires and secure with five aluminum washers and locknuts.

(6) Install clutch control cables, bearing carrier, and clutch release bearing (par. 2–23*a* and *b*).

(7) Turn vehicle back on wheels and install engine (par. 2–17).

(8) Fill transmission as directed on lubrication chart or LO 9–2320–246–12.

2–53. Rear Axle Cover Housing and Hub Assembly (M274A5)

Note. The rear axle on the M274A5 does not incorporate four-wheel steering as on all other M274 vehicles. The universal joint assembly is replaced by a solid shaft. The steering knuckle and knuckle cover are replaced by a solid cover housing (insert on fig. 2–64).

a. Removal (Figure 2–67 and Figure 2–68).

(1) Turn vehicle over (par. 2–50*a*(1) and (2)) or support as necessary.

(2) Remove wheel and tire assembly (par. 2–62*a*).

(3) Remove hub retainer nut and lifting hook (par. 2–51*a*(3)) (fig. 2–67).

(4) Remove wheel hub (par. 2–51*a*(4)).

(5) Remove six 5/16–24 hex nuts, four 5/16–24 × 1 machine screws, and ten 5/16 lockwashers from rear axle cover (fig. 2–68).

(6) Remove rear axle cover and cover gasket, from housing, Replace gasket if defective.

(7) Remove seal from cover, using a seal remover or suitable tool. Replace seal if defective.

Note. Install seal flush with outside surface of cover. Do not seat on snapring.

(8) Remove snapring from cover and, using a suitable arbor press, remove bearing. Clean and inspect bearing. Replace if defective.

(9) Remove shaft and wheel joint sleeve.

b. Installation. For installation of M274A5 rear axle hub assembly, reverse procedure in paragraph 2–53*a*(1) through (9).

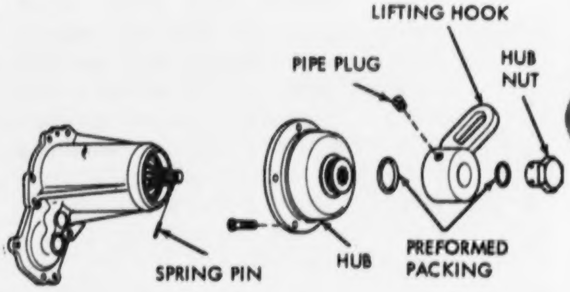


Figure 2–67. Rear axle hub—exploded view.

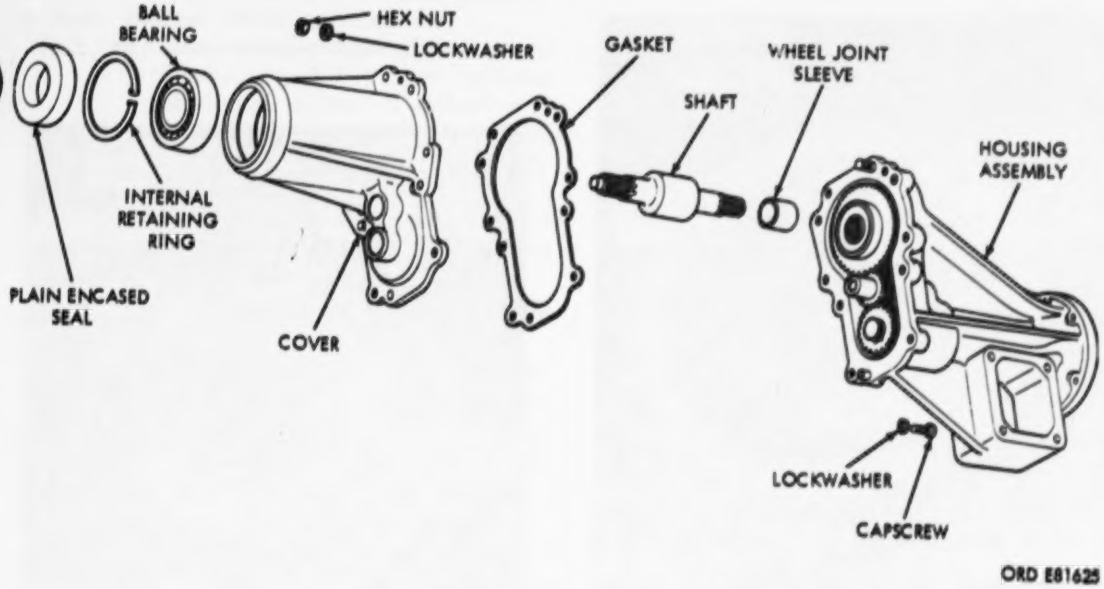

BALL BEARING
HEX NUT
LOCKWASHER
GASKET
WHEEL JOINT SLEEVE
SHAFT
HOUSING ASSEMBLY
INTERNAL RETAINING RING
PLAIN ENCASED SEAL
COVER
LOCKWASHER
CAPSCREW
ORD E81625

Figure 2-68. Rear axle cover—exploded view.

Section XVI. BRAKE

2-54. General

The following paragraphs cover the removal, installation and adjustment of the brake and brake components located on the rear of the front axle. A single brake of the internal expanding type is used. The brake is mechanically operated by either a foot pedal or the handbrake lever. The brake lining on the M274A3 vehicle is in four sections, fused to a brakeband. The brake lining on all other vehicles is bonded on two shoes. Brake adjustment on all vehicles is accomplished by screw adjustment, changing the length of flexible linkage connecting the hand and foot levers; or by changing the hole through which clevis pin on rear end of foot brake linkage is attached to brake lever.

2-55 Brakeshoes and Deflector Shield Assembly

a. Removal.

(1) Disconnect propeller shaft (para 2-47*a*) and temporarily install two universal joint-attaching screws (fig. 2-69).

(2) Apply handbrake. Loosen self-locking nut (fig. 2-69) securing companion flange to front axle pinion shaft. Release handbrake.

(3) Remove two universal joint-attaching screws and remove brakedrum (fig. 2-69).

(4) Remove two brakeshoe return springs (fig. 2-70).

(5) Remove two brakeshoes (fig. 2-70). Examine and replace as required.

(6) Remove two brakeshoe rollers (fig. 2-71).

(7) Remove cotter pin and clevis pin (fig. 2-71). Disconnect brake link assembly from brake actuating lever and cam.

(8) Drain front axle lubricant (fig. 2-71).

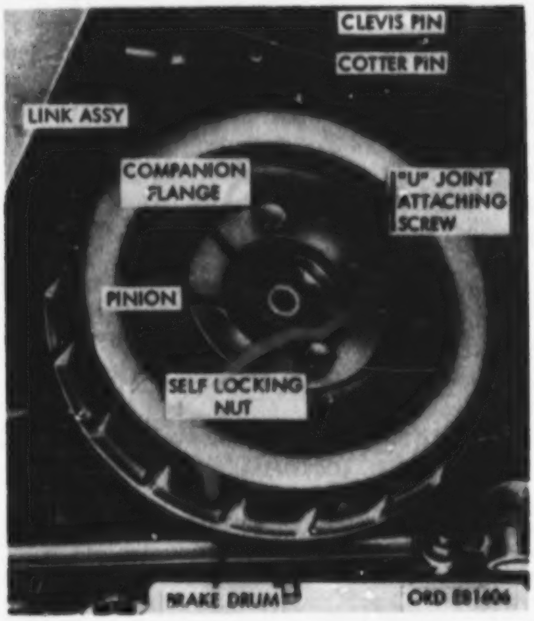

CLEVIS PIN
COTTER PIN
LINK ASSY
COMPANION FLANGE
"U" JOINT ATTACHING SCREW
PINION
SELF LOCKING NUT
BRAKE DRUM
ORD E81606

Figure 2-69. Loosening or tightening companion flange nut.

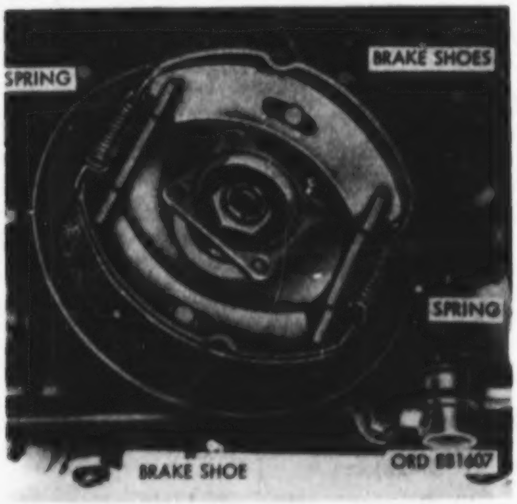

BRAKE SHOES
SPRING
SPRING
BRAKE SHOE
ORD E81607

Figure 2-70. Removing or installing brakeshoes.

(9) Remove companion flange self-locking nut (fig. 2-71).

(10) Remove companion flange (fig. 2-71).

(11) Remove four hex nuts and lockwashers securing brake backing plate to axle, and remove plate (fig. 2-72).

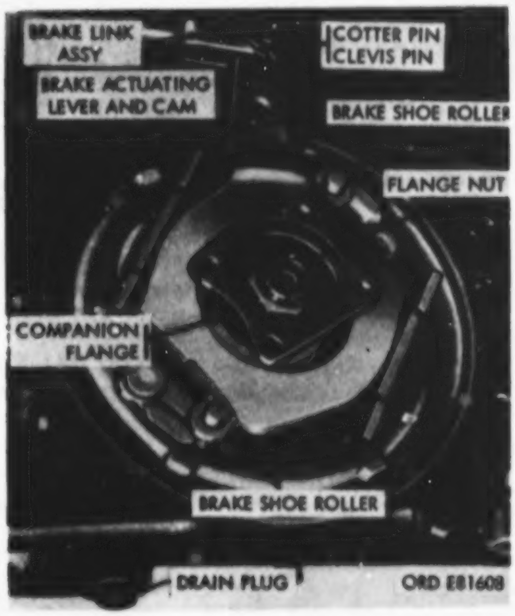

BRAKE LINK ASSY
COTTER PIN
CLEVIS PIN
BRAKE ACTUATING LEVER AND CAM
BRAKE SHOE ROLLER
FLANGE NUT
COMPANION FLANGE
BRAKE SHOE ROLLER
DRAIN PLUG
ORD E81608

Figure 2-71. Disconnecting or connecting brake link assembly.

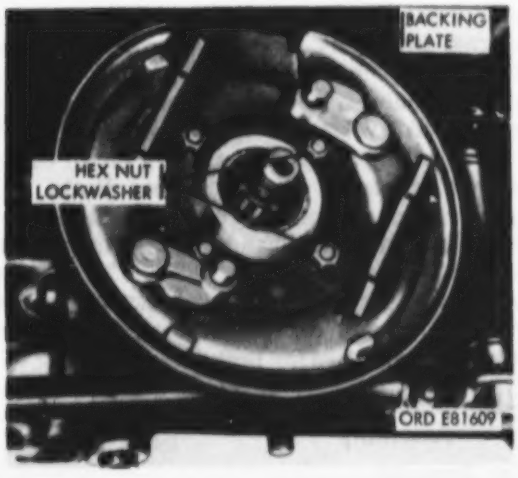

BACKING PLATE
HEX NUT
LOCKWASHER
ORD E81609

Figure 2-72. Removing or installing brake backing plate.

(12) Remove deflector shield assembly (fig. 2-73).

(*a*) If necessary, remove plain encased oil seal (fig. 2-74) from deflector shield and discard if defective.

(*b*) Remove nonmetallic washer from shield and retain from reassembly (fig. 2-74).

(*c*) If necessary, remove felt seal from assembly and discard if defective (fig. 2-74).

(13) Remove deflector shield gasket (fig. 2-74) and discard if defective.

b. Installation. Reverse the removal procedure of paragraph 2-55a to install deflector shield assembly and brakeshoes. Tighten companion flange nut to a torque of 80 to 100 pounds-foot. Install propeller shaft (par. 2-47*b*).

c. Adjustment. Loosen two hex nuts (fig. 2-75). Turn link rod in direction necessary to loosen or tighten brakes so that when brake pedal is depressed to near halfway, brakes will lock. Tighten two nuts against clevis after satisfactory adjustment has been made.

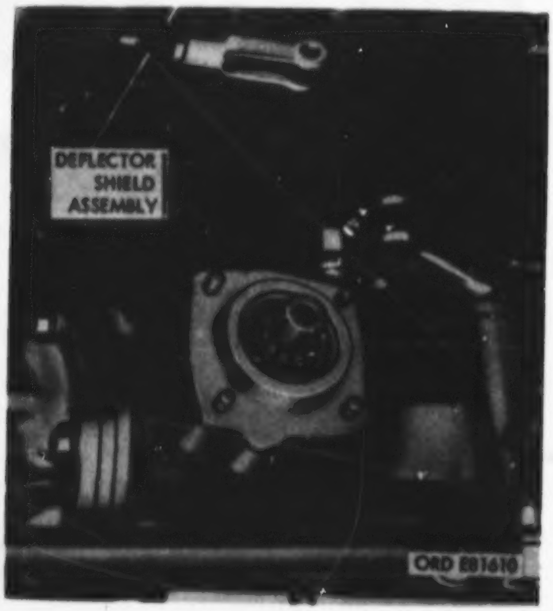

DEFLECTOR SHIELD ASSEMBLY
ORD E81610

Figure 2-73. Removing or installing deflector shield assembly.

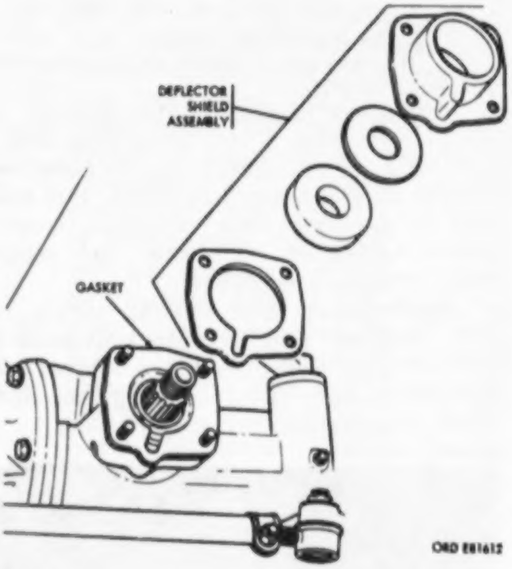

DEFLECTOR SHIELD ASSEMBLY
GASKET
ORD E81612

Figure 2-74. Removing or installing deflector shield gasket.

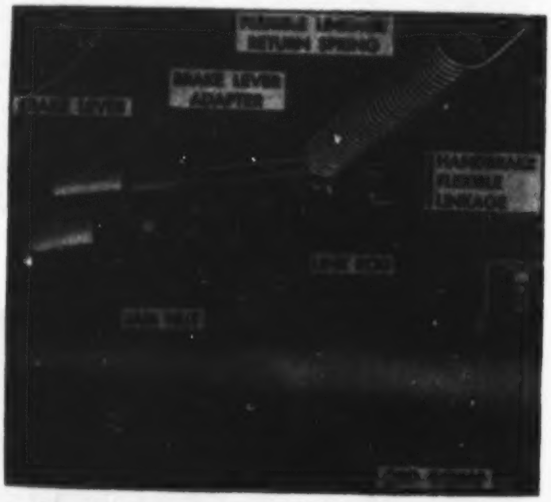

FLEXIBLE LINKAGE RETURN SPRING
BRAKE LEVER ADAPTER
BRAKE LEVER
HANDBRAKE FLEXIBLE LINKAGE
LINK ROD

Figure 2-75. Location of brake lever and linkage.

2-56. Brakeband and Dirt and Liquid Deflector—M274A3

a. Removal.

(1) Drain lubricant from axle housing. Remove lockwire if applicable, and four hex-head screws and lockwashers securing front end of propeller

shaft to brakedrum, and push end of propeller shaft to one side, out of the way (par. 2-47*a*).

Note If screws are not drilled for lockwire, replace with screw 7966811-1.

(2) Apply handbrake and unscrew hex nut (fig. 2-76) from rear end of drive gearshaft. Remove plain washer and release handbrake. Pull brakedrum and front companion flange off shaft of drive gear and separate drum and flange.

(3) Remove band locating spring (fig. 2-77) from between brakeband and right prong on brake support plate. Remove brake actuating cam. Spring brakeband off support plate.

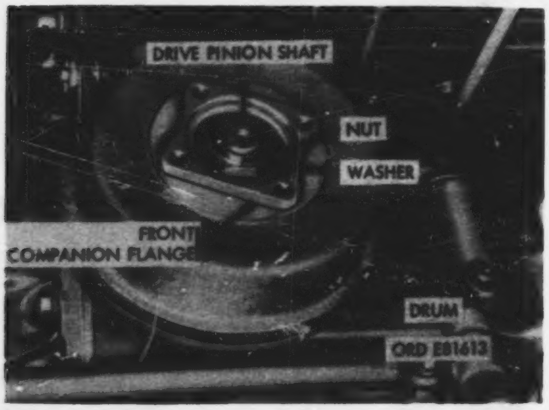

DRIVE PINION SHAFT
NUT
WASHER
FRONT COMPANION FLANGE
DRUM
ORD E81613

Figure 2-76. Brake with propeller shaft removed—M274A3.

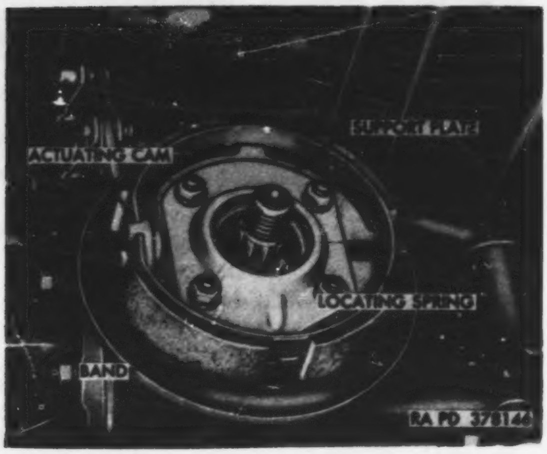

SUPPORT PLATE
ACTUATING CAM
LOCATING SPRING
BAND
RA PD 378146

Figure 2-77. Brake with drum removed—M274A3.

(4) Pull actuating cam (fig. 2-78) off brake support plate and from between ends of brakeband. Remove four hex nuts and lockwashers, and remove oil slinger, gasket, brake support plate, and second gasket, in order named.

(5) Work dirt and liquid deflector (fig. 2-79) off studs and brake lever. Remove gasket.

Caution: **Do not disturb the pinion bearing retainer plate or shims (fig. 2-80) located between the deflector and front axle carrier, as these control the adjustment of the drive gear.**

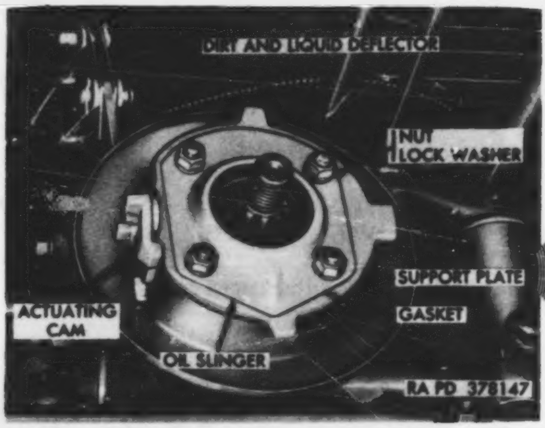

DIRT AND LIQUID DEFLECTOR
NUT
LOCK WASHER
SUPPORT PLATE
GASKET
ACTUATING CAM
OIL SLINGER
RA PD 378147

Figure 2-78. Brake with band removed—M274A3.

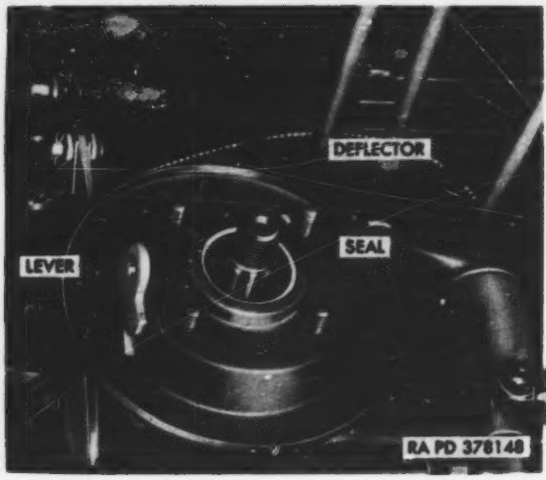

DEFLECTOR
SEAL
LEVER
RA PD 378148

Figure 2-79. Brake lever, and dirt and liquid deflector—M274A3.

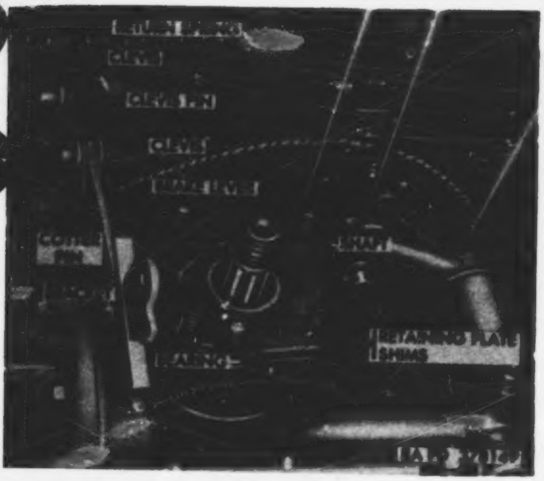


Figure 2-80. Shaft bearing and adjusting shims after removal of brake—M274A3.

(6) If necessary, press plain encased seal (fig. 2-79) out of dirt and liquid deflector and replace if defective.

(7) Unhook return spring (fig. 2-80) from clevis pin connecting handbrake flexible linkage to upper end of brake lever, and remove clevis pin. Remove cotter pin and clevis pin connecting footbrake flexible linkage to lower hole in brake lever, and remove lever. Note hole in clevis in which pin is installed, for convenience at assembly.

b. Installation.

(1) Secure rear end of footbrake flexible linkage at brake lever lower hole (fig. 2-80) with a clevis pin and cotter pin. Secure rear end of handbrake flexible linkage to top hole in brake lever with a clevis pin, and hook return spring into hole in clevis pin.

(2) Press new plain encased seal (fig. 2-79) into dirt and liquid deflector, making sure lip of seal is toward large, or front, end of deflector.

(3) Position dirt and liquid deflector (fig. 2-79), with plain encased seal, on studs on front axle carrier with brake lever through slot in deflector. Install gasket (fig. 2-78) on studs against deflector. Work brake support plate into hole in end of brake lever and onto studs. Position gasket and oil slinger on studs against support plate and secure with four lockwashers and hex nuts.

(4) Spring brakeband (fig. 2-77) onto prongs of brake support plate, and install band locating spring between right prong and band. Spread ends of band slightly and install actuating cam on left prong of support plate and between ends of brakeband.

(5) Push front companion flange (fig. 2-76) into brakedrum from rear face, and slide drum and flange over brakeband and onto drive gear shaft. Apply handbrake. Secure flange with plain washer and self-locking hex nut on end of shaft, and release handbrake.

(6) Aline holes in brakedrum and front companion flange, position flange on front end of propeller shaft against companion flange, and secure with four lockwashers, hex-head screws, and locking wire.

2-57. Footbrake Flexible Linkage (Figure 2-81)

a. Front Flexible Linkage.

(1) *Removal.* Apply handbrake. Disconnect front footbrake flexible linkage from quick-disconnect coupling (fig. 2-81) just forward of front end of platform, and release handbrake. Drive out spring roll pin securing clevis on front end of linkage to brake pedal lever.

(2) *Installation.* Position clevis (fig. 2-81) on front end of front flexible linkage on brake pedal lever and install 1/4 × 5/8 spring roll pin. Apply handbrake, install ball on rear end of front flexible linkage in coupling on front end of rear flexible linkage, and release handbrake.

(3) *Adjustment.* The total length of front and rear flexible linkages when installed, must be so adjusted that when brake lever and brake pedal are in extreme rear position

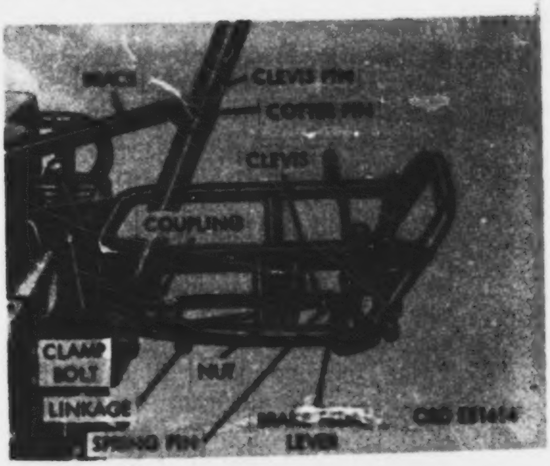


Figure 2-81. Footbrake front control flexible linkage.

there is no slack in linkages. Adjustment may be made by applying hex nut (fig. 2-81) on front linkage and turning threaded end of cable in clevis, by changing the hole used in the clevis on rear end of rear linkage, or by both.

b. Rear Flexible Linkage.

(1) *Removal.* Apply handbrake. Disconnect rear flexible linkage from quick-disconnect coupling (fig. 2-82). Remove cotter pin and clevis pin connecting clevis on rear end of rear flexible linkage to brake lever (fig. 2-75), and pull linkage out of guide in bed support front crossmember.

(2) *Installation.* Push front end of flexible linkage through guide in bed support front crossmember, from the rear. Install ball on front end of rear linkage in coupling (fig. 2-82) on rear end of front flexible linkage. Pull clevis on rear end of linkage back to remove slack, position clevis in lower hole in brake lever, and install clevis pin and cotter pin securing clevis to lever. Release handbrake and check adjustment of linkage as directed in *a*(3) above.

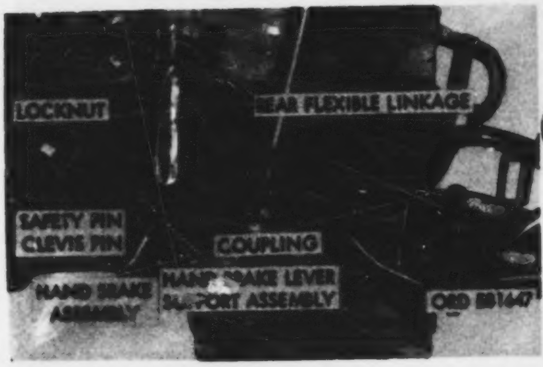


Figure 2-82. Disconnect-points for brake control flexible linkage.

2-58. Handbrake Flexible Linkage

Note. See paragraph 2-59 for M274A3.

a. Removal. Remove brake flexible linkage return spring (fig. 2-75). Remove safety pin and clevis pin (fig. 2-82) and disconnect front end of handbrake flexible linkage from handbrake lever. Remove cotter pin, washer and clevis pin (fig. 2-75), and disconnect rear end of flexible linkage from handbrake lever adapter. Remove plain nut, lockwasher, machine screw, and clamp securing handbrake flexible linkage to bracket (fig. 2-75) at right side of platform. Remove plain nut, lockwasher, machine screw, and clamp securing front end of linkage to conduit support bracket (fig. 2-42). Pull linkage through the rear of crossmember and remove from vehicle. Loosen locknut and remove clevis and plain nut from front end of flexible linkage.

b. Installation. Install locknut and clevis on threaded end of flexible linkage. Insert through rear side of crossmember. Attach front end of linkage conduit to conduit support bracket (fig. 2-42) using clamp, 5/16 × 1 machine screw, lockwasher, and plain nut. Attach rear end of linkage conduit to bracket using clamp, 5/16 × 1 machine screw, lockwasher, and plain nut. Connect rear end of flexible linkage to handbrake lever adapter with clevis pin, washer, and cotter pin. Connect brake flexible linkage return spring. Loosen locknut securing clevis on front end o linkage (fig. 2-82) and adjust clevis to ali with hole in handbrake lever when lever i in extreme rear position and all slack on linkage is removed. Install 5/16 × 27/32 clevis pin and secure with safety pin. Tighten lock nut against clevis.

2-59. Handbrake Flexible Linkage—M274A3

a. Removal. Remove return spring (fig. 2-80) and clevis pin connecting clevis on rear end of linkage to upper hole in brake lever. Remove safety pin and clevis pin (fig. 2-82) securing clevis on front end of handbrake flexible linkage to handbrake lever. Remove two hex nuts, lockwashers and hex-head bolts securing clamps on ends of conduit to conduit support bracket (fig. 2-42) on bed support front crossmember and bracket (fig. 2-80) attached to front axle. Pull linkage to rear of crossmember and remove from vehicle.

b. Installation. Push front end of handbrake linkage through hole in bed support front crossmember. Position clevis on rear end of linkage at upper hole in brake lever and install clevis pin (fig. 2-80). Install retracting spring between hole in clevis pin and hole in tube bracket. Secure clamp and rear end of conduit to bracket secured to rear axle with hex-head bolt, lockwasher and hex nut. Secure clamp and front end of conduit to conduit support bracket (fig. 2-42) on front crossmember with hex-head bolt, lockwasher and hex nut. Loosen locknut securing clevis on front end of linkage (fig. 2-82) and adjust clevis to aline with hole in handbrake lever when lever is in extreme-rear position. Install clevis pin securing clevis to lever and secure clevis pin with safety pin. Tighten locknut against clevis.

2-60. Handbrake Lever

a. Removal. With handbrake released, disconnect return spring from crossmember and adapter (fig. 2-75). Remove hex-head screw (1 fig. 2-43) and lockwasher securing the sector to brake and shift lever support assembly. Remove safety pin from clevis pin securing handbrake flexible linkage to brake lever, and remove clevis pin. Pull handbrake lever assembly off shaft in support assembly.

b. Repair. The handbrake lever (fig. 2-82) assembly is welded and riveted together, the pawl spring being the only part which can be replaced without destroying other parts. To replace pawl spring, unhook ends from body and finger grip, and remove from assembly. Hook a new spring in place with the longer end hooked into finger grip.

c. Installation. Push handbrake lever assembly (fig. 2-82) onto shaft in support assembly, with hole in sector alined with threaded hole in support. Secure sector to support with 3/8 × 7/8 hex-head screw and lockwasher. Position clevis on front end of handbrake flexible linkage in alinement with hole in brake lever, and install clevis pin and safety pin. Install return spring (fig. 2-75).

Section XVII. WHEELS, TIRES AND TUBES

2-61. General

The following paragraphs cover the removal and installation of the wheels, tires and tubes.

Note. For information on removal, repair, or installation of wheel hub and related parts, refer to paragraph 2-51.

2-62. Wheel and Tire

a. Removal.

(1) Raise the vehicle so wheel and tire clear the ground.

(2) Remove five wheel hub (lug) self-locking nuts, five aluminum washers, and remove wheel and tire from hub.

(3) Place wheel and tire on ground with outside of wheel up, and completely deflate tire by removing valve core.

(4) Using tire remover, break bead from rim, stand on tire to force rest of bead loose from rim. Turn wheel and tire over and repeat procedure to break inner bead loose from rim.

(5) Insert two tire tools about eight inches apart between outside bead and rim flange near valve, and pry short lengths of bead over rim

flange. Then leave one tool in position and follow around rim with other tool until bead is completely free of rim. If in prying bead over the flange, too much force is required, it is an indication that the bead is not down in the well on the opposite side of the rim. Inside each tire bead is a loop of wire which must not be broken or unnecessarily strained.

Caution: **Be careful not to pinch tube with tire tools. Do not damage soft rubber tip at toe of bead in prying bead over rim flange. Do not attempt to remove both beads at the same time.**

(6) Remove tube.

(7) Stand tire in upright position with inside bead in well of wheel rim at bottom. Insert tire tool between inside bead and rim flange at top side of wheel and pry wheel out of tire.

b. *Installation.*

(1) Inflate tube until slightly rounded out and insert in tire.

(2) Before installing tire and tube on wheel, soap the exposed surface of tube, tire beads, and inside of casing, one inch from the beads, with a mixture of vegetable-oil, soap and water.

Note. Try not to allow soapy water to run into tire crown.

(3) Place wheel on floor with outside face of wheel up.

(4) With valve on tube inside of tire pointing up, and valve located at valve hole in wheel rim, place inner tire bead in rim well and pry inner tire bead over outer wheel rim, using tire iron.

(5) Pull valve stem through hole in rim, start opposite side of outer tire bead over outer wheel rim, and press bead completely into bottom of rim well. Using tire irons, carefully pry bead over wheel rim advancing both ways toward valve so that bead goes over the rim last, near the valve.

Caution: **Be careful not to pinch the tube or damage soft rubber lip or bead, with tire tools.**

(6) Pull valve out through hole in rim so that valve base seats firmly in inner surface to rim, at the same time centering the valve, and inflat tire to recommended 12 psi.

(7) Deflate tube completely; then inflate to recommended pressure of 12 psi for usual terrain, or 7 psi for mud or snow.

Note. **This step is extremely important to ensure smooth uniform distribution of the tube in the casting.**

(8) Position wheel and tire assembly on wheel hub bolts and secure with five 3/8-inch aluminum washers and self-locking nuts tightened to a torque of 20 to 30 pounds-foot.

(9) Prepare vehicle for operation by removing blocking.

2-63. Tube

a. *Removal.* Remove tube, following directions given in paragraph 2-62*a*(1) through (6).

b. *Repair.* Refer to TM 9-1870-1 for instructions on repairing inner tubes.

c. *Installation.*

Install tube, following directions given in paragraph 2-62(*b*)(1) through (9) as required.

2-64. Tire Rotation

Rotate tires as shown in figure 2-83. Match tires according to tread design and degree of wear. Refer to TM 9-1870-1.

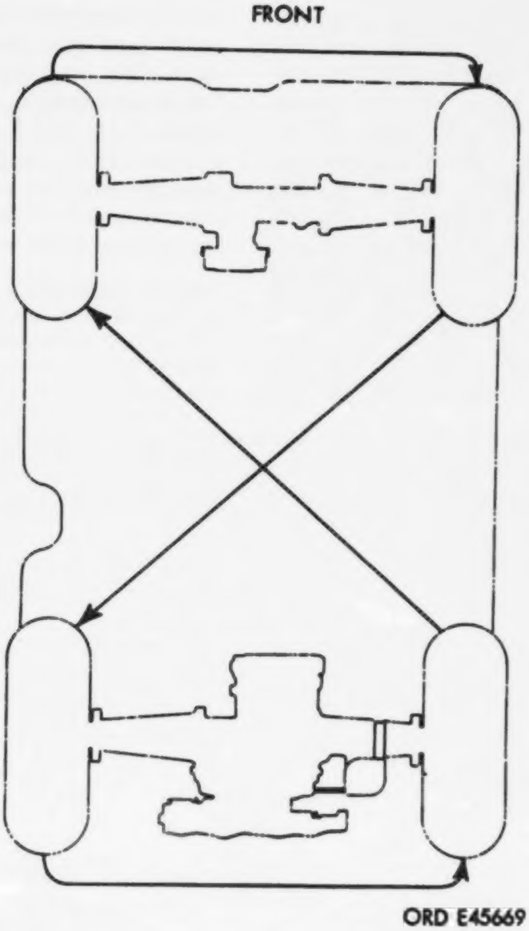


Figure 2-83. Tire rotation diagram.

Section XVIII. STEERING SYSTEM

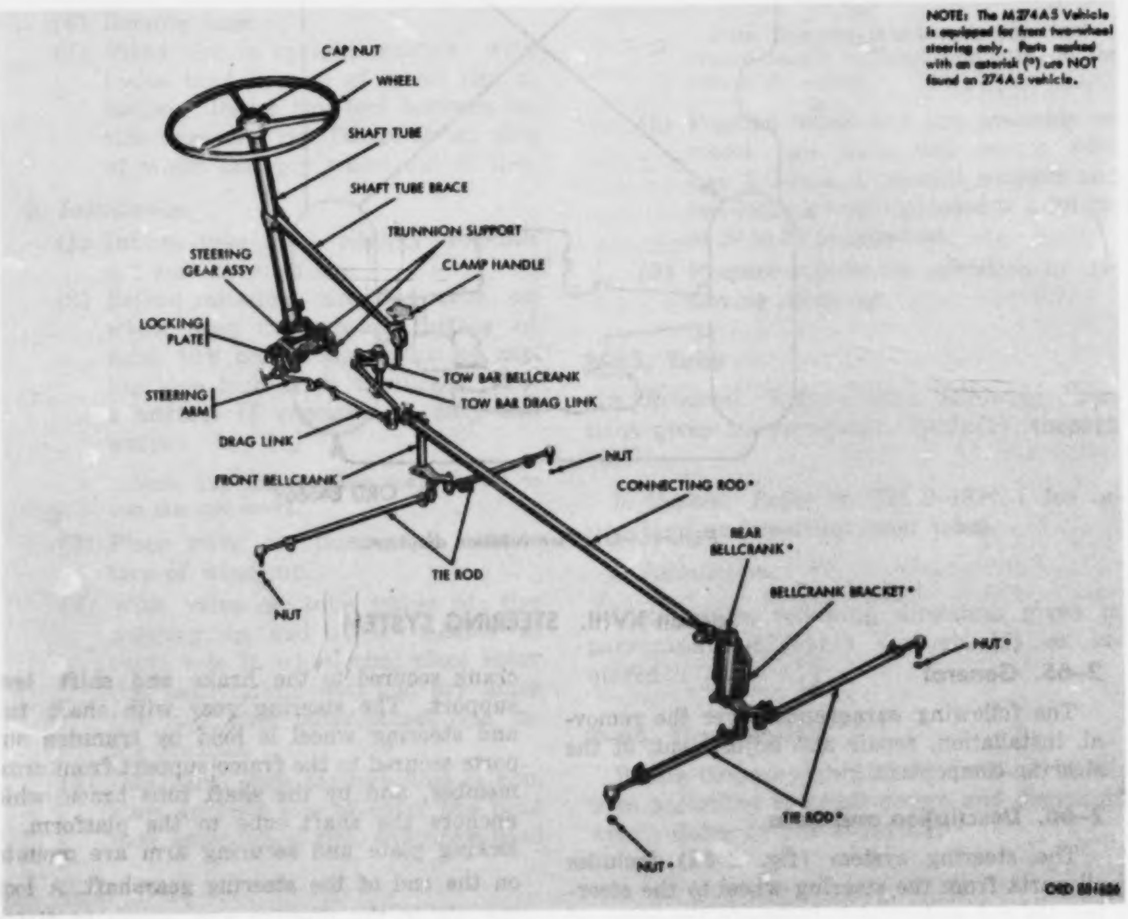
2-65. General

The following paragraphs cover the removal, installation, repair and adjustment, of the steering components.

2-66. Description and Data

The steering system (fig. 2-84) includes all parts from the steering wheel to the steering tie rod ends which fasten to the arms of the steering knuckles, and to the tow bar bellcrank secured to the brake and shift lever support. The steering gear with shaft tube and steering wheel is held by trunnion supports secured to the frame support front crossmember, and by the shaft tube brace which anchors the shaft tube to the platform. A locking plate and securing arm are mounted on the end of the steering gearshaft. A locking pin in the steering arm serves to disconnect the steering gear and wheel when the vehicle is being towed. This eliminates movement of the steering wheel when front wheels are turned by the two bar, when being towed. There are two draglinks, one connecting the front bellcrank to the steering arm and the other connecting the front bellcrank to the tow bar bellcrank. The latter serves to swing the wheels in relation to movement of the tow bar from side to side. There is a steering connecting rod on all M274 vehicle models except the M274A5 which allows the selection of either two- or four-wheel steer as desired. With the front end of the steering connecting rod connected to the rear end of the draglink by a removable pin, four-wheel steer is provided. With the front end of the steering connecting rod connected to the anchor on the right frame tube by the removable pin, the steering knuckles found on the rear axles of all M274 series vehicles, except the M274A5 vehicle, are prevented from turning on the pivot pins and the vehicle is in two-wheel steer. The rear end of the steering connecting rod is attached to the rear bellcrank. Motion of the front and rear bellcrank is transmitted to the front and rear steering knuckles through four tie rods; these tie rods are adjustable and provide the adjustment necessary for proper wheel alinement.

Note. There are no steering knuckles, bellcrank, tie rods, or other steering components on the M274A5 rear axle. The steering gear is a special bevel gear type with a 14 to 1 ratio. The toe-in on steerable axles is 1/8 inch for each wheel.


NOTE: The M274A5 Vehicle is equipped for front two-wheel steering only. Parts marked with an asterisk (*) are NOT found on 274A5 vehicle.

CAP NUT
WHEEL
SHAFT TUBE
SHAFT TUBE BRACE
TRUNNION SUPPORT
STEERING GEAR ASSY
CLAMP HANDLE
LOCKING PLATE
TOW BAR BELLCRANK
STEERING ARM
TOW BAR DRAG LINK
DRAG LINK
NUT
FRONT BELLCRANK
CONNECTING ROD*
REAR BELLCRANK*
TIE ROD
NUT
BELLCRANK BRACKET*
NUT*
TIE ROD*
NUT*
ORD E81686

Figure 2–84. Steering system removed from vehicle.

2-67. Tie Rods

Note. The M274A2, M274A4, and M274A5 vehicles are not equipped with lubricating fittings.

a. Removal. Remove two cotter pins and slotted hex nuts securing tie rod sockets to arm on steering knuckle (fig. 2-50) and bellcrank lower arm (fig. 2-51). Drive sockets out of tapered holes in knuckle and arm, with soft hammer. Remove remaining three tie rods in the same manner.

b. Repair (Figure 2-85).

Note. The four tie rods and the draglink are the same except for the sleeves which are different in length. Sleeves for right-front and left-rear tie rods are 9.95 inches long, for left front and right-rear tie rods, 16.45 inches long, and for draglink, 11.38 inches long. Repair operations on all five items are the same.

(1) Examine dust covers on tie rod ends and replace if torn, stretched or otherwise damaged.

(2) If ball in tie rod end is not held firmly in socket, check for lost motion and replace tie rod end if necessary. Examine threads of slotted nut and ball stud and replace tie rod end if damaged. Examine threads on shaft of tie rod end and, if damaged, either rethread with die or replace entire tie rod end. If shaft of tie rod is bent, either straighten or replace entire tie rod. Replace damaged lubricating fitting, if applicable.

(3) Examine clamps, bolts, and hex nuts, and replace damaged parts as required.

(4) Examine sleeve for bends. If bent, straighten or replace as required.

c. Installation. With dust covers installed, push ball stud of long tie rod end into hole in arm on steering knuckle (fig. 2-50), and stud of short tie rod end into hole in bellcrank lower arm (fig. 2-51). As holes are tapered, studs must go into bellcrank lower arm from bottom, and into steering knuckle from the top. Secure studs with slotted hex nuts tightened to a torque of 20 to 30 pounds-foot, and install 3/32-inch cotter pin.

d. Adjustment (Figure 2-89). Any overhaul or repair work which might change the lengths of any of the tie rods or the draglink, will require a complete adjustment of the steering system. With all parts of the system installed, adjustment for the M274A2 through M274A4 is accomplished as follows:

Note. Front wheel toe-in and toe-out is made to correct the distance between the front and rear of the wheels when in the straight-ahead position.

(1) Raise vehicle on blocks so that wheels just clear the ground.

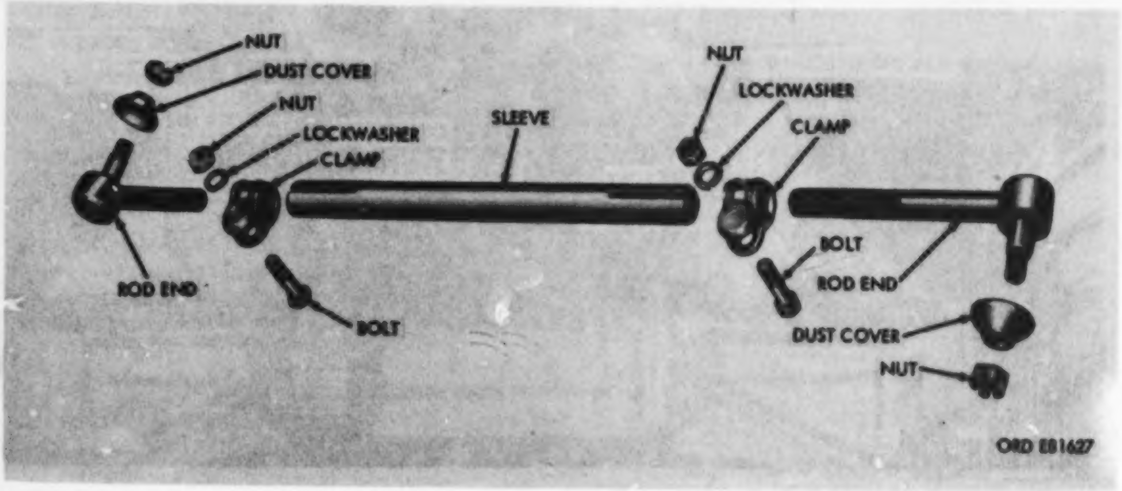


Figure 2-85. Tie rod—exploded view.

(2) Check to see that lockpin (fig. 2–86) in steering arm is pulled out to disconnect steering gear, and locked with handle in vertical position.

(3) Check to see that steering connecting rod is installed between anchor on right frame tube and rear bellcrank upper arm.

(4) Clean dirt from all four tires and chalk center of treads. Rotate wheels and scribe the centerline of the tread, using a suitable marking tool.

(5) Loosen the clamp bolts on tie rods and draglink.

(6) Place a straightedge against the outside of the front and rear tires on one side of the vehicle, and adjust the rear tie rod on this side to give the rear wheel 1/8-inch toe-in as measured between the straightedge and the scribed centerline at the front and rear of the tire. Adjust the toe-in of the other rear wheel in the same manner. Check adjustment by measuring distance between scribed lines at front and rear of wheels. The measurement should be 1/4 inch less at front than at rear. When correct, tighten the four clamp bolts on rear tie rods.

(7) Set front wheels so that the steering control rod can be swung from two-wheel to four-wheel steer without changing rear wheel position.

(8) Return control rod to frame bracket and install special fixture 4910–671–6614. Connect fixture assembly from bellcrank to control rod being careful not to disturb front-wheel setting.

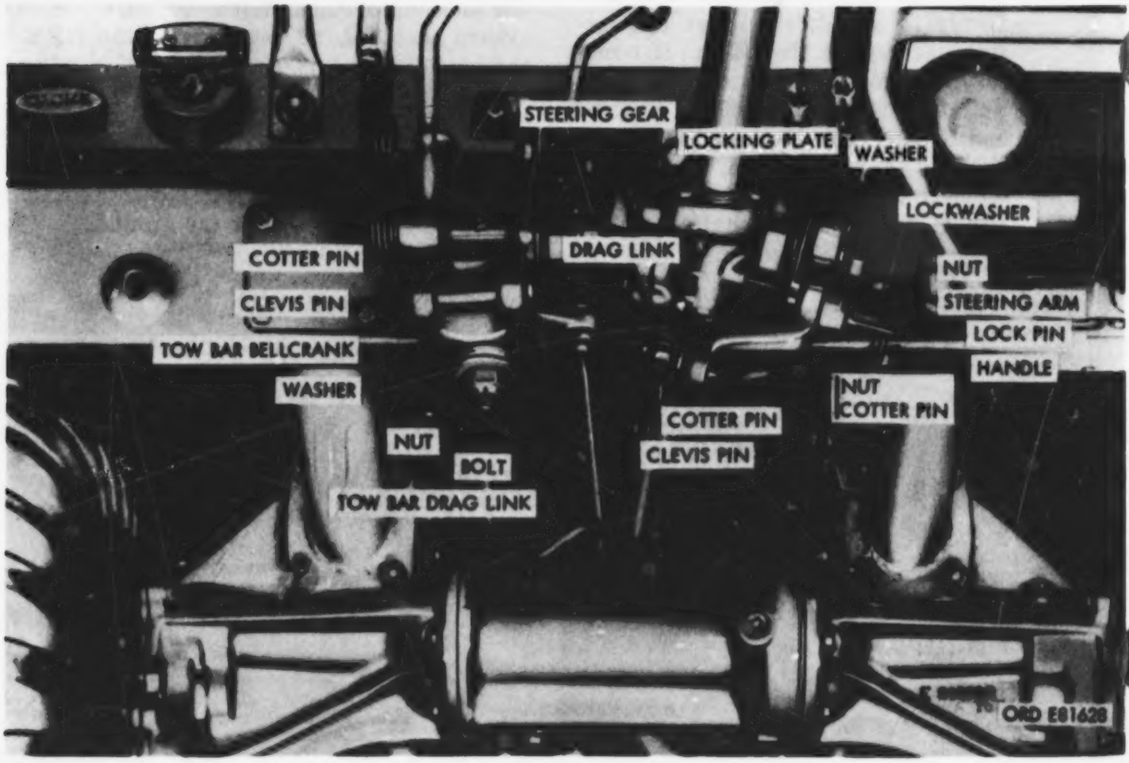

STEERING GEAR
LOCKING PLATE
WASHER
LOCKWASHER
DRAG LINK
COTTER PIN
CLEVIS PIN
NUT
STEERING ARM
LOCK PIN
HANDLE
TOW BAR BELLCRANK
WASHER
NUT
BOLT
TOW BAR DRAG LINK
COTTER PIN
CLEVIS PIN
NUT
COTTER PIN
ORD E81628

Figure 2–86. Steering gear and arm showing lockpin pulled out to disconnected steering arm from locking plate.

(9) Adjust the toe-in of the front wheels in the same way that rear wheel toe-in was adjusted ((6) above).

Caution: **To secure correct adjustment of front wheel toe-in, the adjustment must be made with the rear wheels held exactly in the same position as they were in when the connecting rod was attached to the anchor.**

(10) Loosen clamp handle on shaft tube brace, and pull steering wheel back until the outer tube of the brace reaches the end of its motion on the inner tube. Move wheel forward until there is about 1/4-inch clearance at the rear end of the outer tube, and tighten clamp handle.

(11) Turn the steering wheel as necessary, to position it at the center point of its travel.

Note. If the locking plate has been correctly installed on the steering gear the notch in the edge of the plate will be alined with the pin in the steering housing when the steering wheel is at center point of its travel.

(12) With the steering wheel (fig. 2–84) in center point of its travel, as described in (11) above, and wheels in straightahead position, as described in (6), (8) and (9) above, adjust sleeve on draglink as necessary, to allow lockpin (fig. 2–87) to enter rear hole in locking plate as shown. Tighten the two clamp bolts on draglink.

(13) Disconnect special fixture from steering control rod and bellcrank.

(14) When wheels have proper toe-in, 1/8-inch toe-in will be noted on both front and rear wheels.

e. Adjustment—M274A5.

(1) Position vehicle on smooth, level surface.

(2) Inflat tires to correct pressure (par. 2–62*b*).

(3) Set wheels in the straightahead position.

(4) Place toe-in and toe-out bar gage (fig. 2–88) from tool kit Automotive Organizational Maintenance Common Number One, between the wheels ahead of the axle, with the ends of the gage against the tire sidewalls and with pendant chains just touching the ground. Set gage so pointer registers zero.

(5) Remove gage from front of axle and place in same relative position at rear of axle, with gage ends of sidewalls of tires, and pendant chains just touching floor. The pointer will indicate the amount of toe-in or toe-out.

(6) Loosen hex-head screws (fig. 2 85) on tie rod end clamping brackets.

(7) Turn tie rods in either direction until desired setting is indicated on bar gage pointer.

Note. Steering wheel can be centered when adjusting toe-in by turning right and left tie rods an equal distance in opposite directions.

(8) Tighten hex-head screws on tie rod clamping brackets and remove toe-in and toe-out bar.

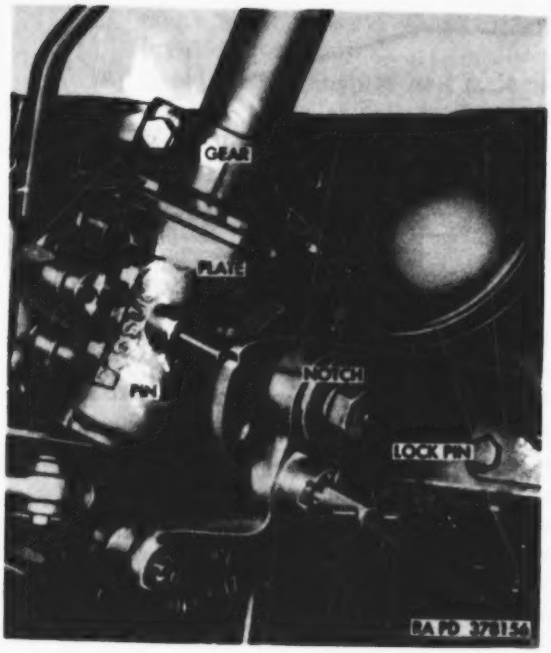
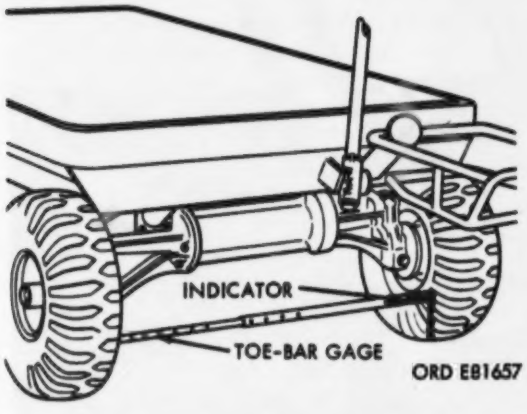


Figure 2–87. Position of steering gear, locking plate, and lockpin at final adjustment of steering system.



ORD E81657

Figure 2-88. Position of toe-in and toe-out bar gage.

(9) Repeat steps 3 through 8 until correct setting of 1/8-inch toe-in is obtained.

f. Adjustment—M274A2 Through M274A4 Alternate Procedure.

(1) Place vehicle on level floor.

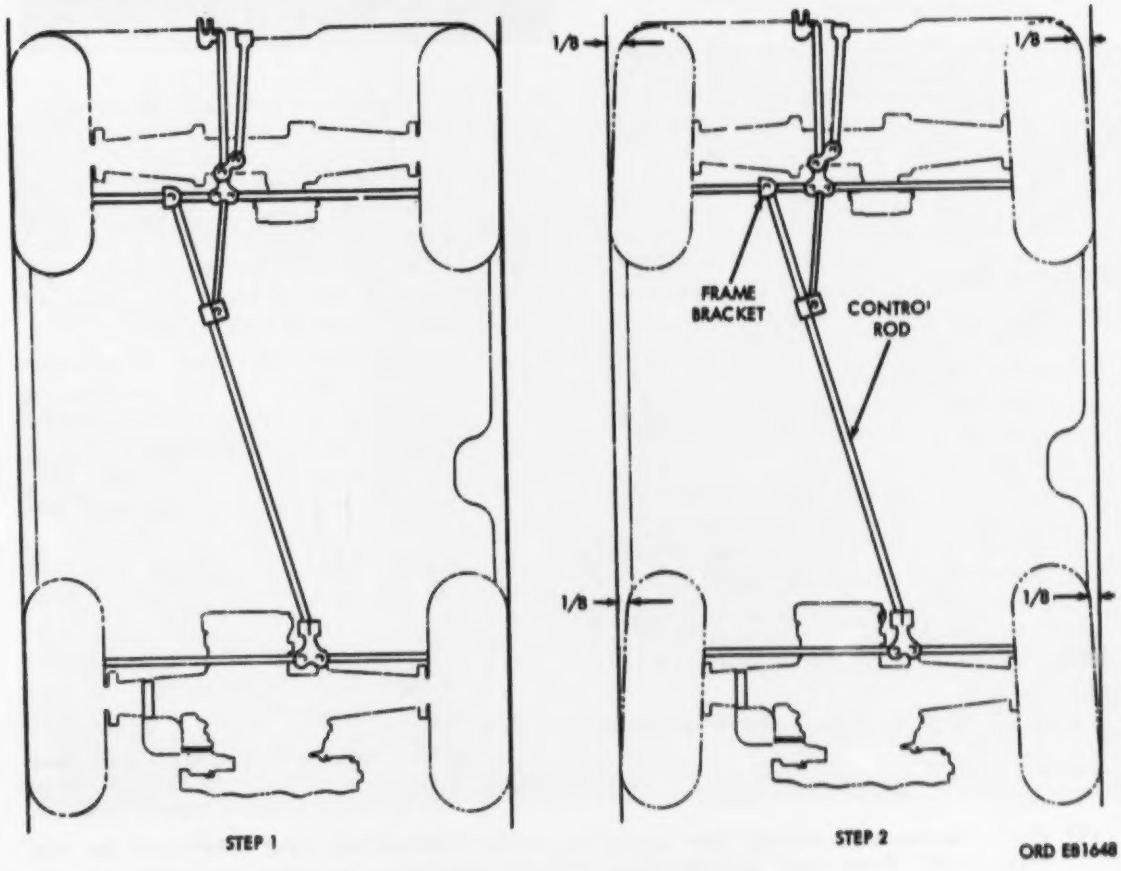
(2) Connect rearwheel steering control rod to frame bracket, using the quick-disconnect pin as shown in figure 2-89, step 1.

(3) Tie a piece of cord approximately ten feet long, to rear axle. Run cord around rear edge of rear tire at hub level, and continue along to front tire at hub level, as shown in figure 2-89, step 2. Tie remaining end of cord to front axle.

(4) Turn front wheels as necessary, until cord touches both faces of front tire, as shown in figure 2-89, step 2.

(5) Set toe-in on rear wheel to 1/8 inch.

(6) Repeat procedures 3 through 5 on opposite side.



ORD E81648

Figure 2-89. Wheel alinement instructions, steps 1 and 2.

(7) Set front wheels so that the steering control rod can be swung from two-wheel to four-wheel steer without changing rear wheel position.

(8) Return control rod to frame bracket and install special fixture 4910-671-6614 as shown in figure 2-90. Connect fixture assembly from bellcrank to control rod, being careful not to disturb front wheel setting.

(9) Draw cord across side of tires at hubcap level and set toe-in on front wheels to 1/8-inch as shown in step 3.

(10) When wheels have proper toe-in, 1/8-inch toe-in will be noted on both front and rear wheels.

(11) Disconnect special fixture from steering control rod and bellcrank.

2-68. Bellcrank Bearings

a. Removal of Front Bellcrank Bearings.

(1) Remove cotter pin, slotted nut, and flat washer securing bellcrank lower arm to front bellcrank. Pull lower arm from splines of bellcrank. Remove retaining snapring and special washer.

(2) Remove cotter pin and slotted nut securing rear end of draglink (fig. 2-84) to end of bellcrank upper arm (fig. 2-51) and press stud in end of link out of arm. Pull out clevis pin connecting rear end of tow bar draglink to bellcrank upper arm and swing link off end of arm. Lift bellcrank upper arm out of needle bearings in front axle.

(3) Drive needle bearings and plain encased seals out of bore in front axle, with suitable drift.

b. Installation of Front Bellcrank Bearings.

(1) Using steering bellcrank bearing replacer 7010301 (fig. 2-91), install needle bearings in ends of bore in front axle, and install plain encased seals at outer ends of bearings. Plain encased seals are installed lip out, to prevent entrance of water or dirt.

(2) With thrust washer (fig. 2-51) installed on front bellcrank upper arm, push arm through bearings in front axle from top. Position fork in rear end of tow bar draglink in alinement with inner hole in bellcrank upper arm, and install clevis pin. Install bell stud on rear end of draglink in hole in end of bellcrank upper arm, From underside, and secure

STEERING CONTROL ROD
BELLCRANK
FIXTURE—
ORD E4…71

Figure 2-90. Special fixture 4910-671-6614 connected to bellcrank and steering control rod.

HANDLE—7010321
REPLACER—7010301
RA PD 378157

Figure 2-91. Installing front steering bellcrank bearing with replacer 7010301—M274A2 through M274A4.

with slotted hex nut and cotter pin tightened to a torque of 20 to 30 pounds-foot, as required to install 3/32-inch cotter pin.

(3) Install the bellcrank special washer and retaining snapring. Aline mark on bellcrank lower arm with mark on end of bellcrank (fig. 2-92) and push lower arm onto bellcrank splines. Secure lower arm with flat washer and slotted nut. Secure slotted nut with cotter pin.

c. Removal of Rear Bellcrank Bearings.

(1) Remove cotter pin, slotted nut, and flat washer securing bellcrank lower arm to rear bellcrank. Pull lower arm from splines of bellcrank. Remove special washer and bellcrank retaining ring.

(2) On the M274A3, remove nut an clamp bolt securing bellcrank upper arm; pull lower arm off upper arm and remove woodruff key.

(3) Remove cotter pin (fig. 2-66) and clevis pin securing rear end of steering connecting rod to bellcrank upper arm, and slide rod off arm. Lift bellcrank upper arm out of bearings in bellcrank bracket.

(4) Remove four hex nuts and lockwasher securing rear bellcrank bracket to axle housing and remove bracket. Drive needle bearings and plain encased seals out of bracket, with suitable drift.

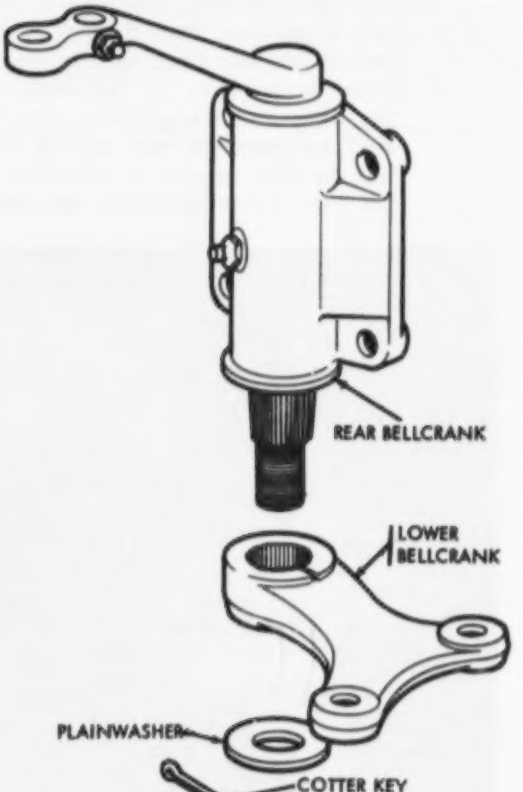


Figure 2-92. Installation of bellcrank lower arm, to bellcrank.

d. Installation of Rear Bellcrank Bearings.

(1) Using steering bellcrank bearing replacer 7010301 (fig. 2-93), install needle bearings in ends of bore i bellcrank bracket, and install pla encased seals at outer ends of bea ings. Plain encased seals are installed, lip out, to prevent entrance of water or dirt. Position bracket on left side of housing and secure with four lockwashers and hex nuts.

(2) With thrust washer installed on rear bellcrank upper arm, push arm through bearings in bellcrank bracket front top. Position fork in rear end of steering connecting rod in alinement with hole in upper arm, and install clevis pin and cotter pin.

(3) Install the bellcrank retaining ring and special washer. Aline mark on bellcrank lower arm with mark (fig. 2-92) on end of bellcrank, and push lower arm onto the bellcrank splines. Secure lower arm with flat washer and slotted nut. Secure slotted nut with cotter pin.

(4) On the M274A3 (fig. 2-92) insta number 8 woodruff key in low end of bellcrank upper arm; pus bellcrank lower arm over key and into upper arm, and secure with 3/8-24NF × 2 hex-head bolt and self locking hex nut.

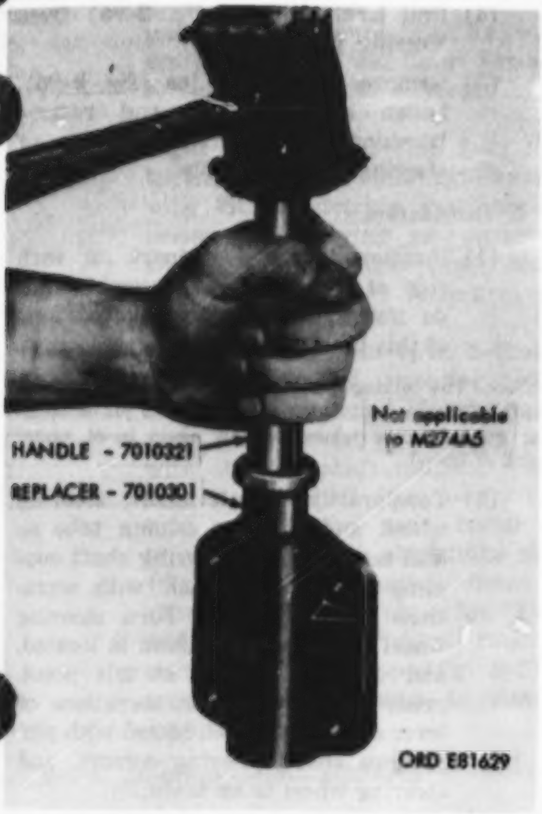


Figure 2-93. Installing rear steering bellcrank bearing with replacer—7010301.

2-69. Draglink

a. Removal. Remove cotter pins and slotted hex nuts securing ball studs in draglink (fig. 2-84) ends to front bellcrank upper arm and steering arm. Press studs out of arms and remove draglink from vehicle.

b. Installation. Insert ball stud on long end of draglink (fig. 2-84) into hole in steering arm from right side, and stud on short end into end hole in front bellcrank upper arm from bottom. Secure studs to arms with lotted nuts and cotter pins tightened to a tor-ue of 20 to 30 pounds-foot, as required to nsert cotter pins.

2-70. Tow Bar Draglink

a. Removal. Remove the two pins connect-ng two bar draglink (fig. 2-94) to steering connecting link and bellcrank upper arm. Remove cotter pin (fig. 2-86) and clevis pin connecting front end of tow bar draglink (fig. 2-86) to tow bar bellcrank (fig. 2-86), and remove tow bar draglink.

b. Installation. Position tow bar draglink (fig. 2-84) between tow bar bellcrank (fig. 2-86) and inner hole on front bellcrank upper arm (fig. 2-94). Secure link to tow bar bellcrank with clevis pin and cotter pin (fig. 2-86). Secure link to bellcrank upper arm with special clevis pin (fig. 2-94) with finger ring. Position front end of steering connecting link at end hole in front bellcrank upper arm, and secure with special clevis pin with finger ring.

2-71. Tow Bar Bellcrank (Figure 2-86)

a. Removal. Remove cotter pin and clevis pin securing front end of tow bar draglink to tow bar bellcrank. Remove self-locking nut from bolt securing tow bar bellcrank to brake and shift lever support assembly, and remove bellcrank from vehicle.

b. Installation. Push tow bar bellcrank onto bolt in brake and shift lever support assembly, with arm for draglink to left as shown in the illustration. Secure with plain washer and self-locking nut and tighten to a torque

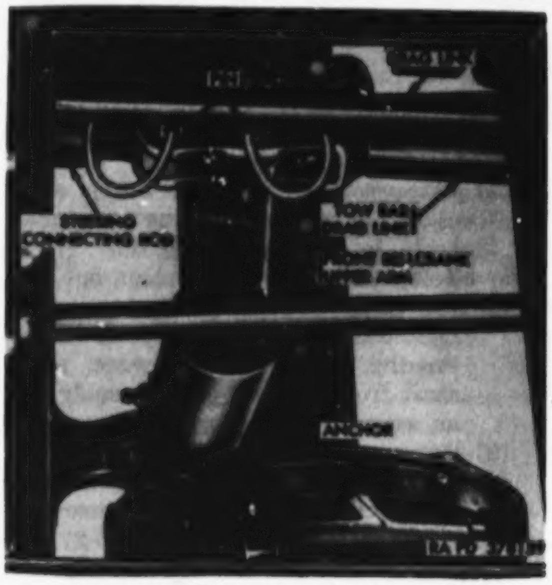


Figure 2-94. Disconnect-points for draglinks.

of 90 to 110 pounds-foot. Aline hole in front end of tow bar draglink with hole in arm of bellcrank and install clevis pin and cotter pin.

2–72. Steering Arm (Figure 2–86.)

a. Removal. Remove cotter pin and slotted hex nut securing front end of draglink to lower end of steering arm, and press end of link out of arm. Remove hex nut, lockwasher, and plain washer securing steering arm, and pull arm off left end of steering gear housing.

b. Installation. Position steering arm on left end of steering gear housing and secure with special washer, lockwasher and hex nut screwed onto end of lever shaft. Push stud in front end of draglink into lower end of steering arm from the right, and secure stud in arm with slotted hex nut tightened to a torque of 20 to 30 pounds-foot, as required to secure with cotter pin.

2–73. Steering Wheel (Figure 2–84)

a. Removal. Unscrew capnut from upper end of steering wheel shaft. Using a suitable puller, pull wheel off shaft.

b. Installation. Push steering wheel into position on serrations at top end of steering wheel shaft and secure by installing special capnut.

2–74. Steering Gear

a. Removal.

(1) Remove cotter pin (fig. 2–81) and clevis pin securing steering gear tube brace to steering column tube (fig. 2–84). Loosen two hex nuts on U-bolt clamp (fig. 2–2) securing steering column to steering gear. Pull steering column, steering wheel, and shaft from steering gear assembly as an assembly.

(2) Remove steering arm (par. 2–72*a*).

(3) Remove four capscrews (fig. 2–42) and lockwashers securing steering gear trunnion supports (fig. 2–2) to crossmember. Remove steering gear assembly.

(4) Pull locking plate (fig. 2–95) from steering gear.

(5) Remove two cotter pins (fig. 2–95), loosen slotted nuts, and remove trunnion support from each side of steering gear assembly.

b. Installation.

(1) Position trunnion support on each side of steering gear assembly but do not tighten the two slotted nuts at this time.

Note. **The locking plate must be installed on lever shaft so that notch in plate is alined with pin in steering gear housing when steering wheel is at center point of travel.**

(2) Temporarily install shaft, steering wheel, and steering column tube so that serrations on steering shaft coupling inside tube, mesh with serrations on tube shaft. Turn steering wheel until center position is located, and with wheel held at this point, press locking plate onto serrations of lever shaft with notch alined with pin. Remove shaft, steering column, and steering wheel as an assembly.

(3) Position steering gear (fig. 2–86) on front of frame support front cross-

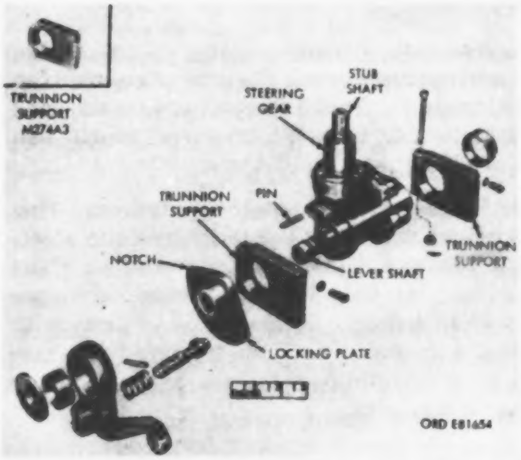


Figure 2–95. Steering gear, trunnions, and locking plate, as removed from vehicle—exploded view.

member and secure with lockwashers (fig. 2-42) and four hex-head screws. Tighten to a torque of 20 to 30 pounds-foot.

(4) Tighten slotted nut (fig. 2-2) until trunnion support bushings have a snug fit on steering gear housing bosses, and steering gear assembly swings with a slight drag. Install cotter pin (fig. 2-2) to secure each slotted nut.

(5) Install steering arm (par. 2-72*b*).

(6) Install assembled steering shaft, steering column, and steering wheel (fig. 2-84) on top of steering gear, with steering shaft coupling inside tube on stub shaft (fig. 2-95). Turn tube until clamp near center of tube is alined with shaft tube brace (fig. 2-84) and secure brace to clamp with clevis pin (fig. 2-81) and cotter pin. Tighten two hex nuts on U-bolt clamp (fig. 2-2) to secure steering column to steering gear assembly.

2-75. Steering Gear—M274A3

a. Removal.

(1) Remove cotter pin (fig. 2-81) and clevis pin securing steering shaft tube brace to steering shaft tube (fig. 2-84). Loosen clamp bolt (fig. 2-81) and pull shaft tube and attached parts off steering gear assembly (fig. 2-84).

(2) Remove steering arm (par. 2-72*a*).

(3) Remove four hex-head screws (fig. 2-42) and lockwashers, securing the two steering gear trunnion supports to frame support front crossmember, and remove steering gear and attached parts.

(4) Pull locking plate (fig. 2-95) off serrations on lever shaft, and remove trunnion supports from trunnions of steering gear.

b. Installation.

(1) Install two trunnion supports (fig. 2-95) on trunnions of steering gear.

Note. It is necessary that the locking plate be installed on the lever shaft in such a position that the notch in the plate is alined with the pin in the steering gear housing when the steering wheel is at the center point of its travel.

Temporarily install shaft tube (fig. 2-84) and attached parts on steering gear so that serrations on steering shaft coupling inside tube, mesh with serrations on stud shaft. Turn steering wheel until center position is located, and with steering wheel held at this point, press locking plate onto serrations of lever shaft with notch alined with pin. Remove shaft tube and attached parts from steering gear.

(2) Position steering gear (fig. 2-86) on front of frame support front crossmember and secure with four lockwashers (fig. 2-42) and hex-head screws tightened to a torque of 20 to 30 pounds-foot.

(3) Install steering arm (par. 2-72*b*).

(4) Install steering shaft tube (fig. 2-84) with attached parts on top of steering gear with steering shaft coupling inside tube on stub shaft (fig. 2-95). Turn tube until clamp near center of tube is alined with shaft tube brace (fig. 2-84) and secure brace to clamp with clevis pin (fig. 2-81) and cotter pin. Tighten clamp bolt securing shaft tube to steering gear.

Section XIX. FRAME AND BRACKETS

2-76. General

The following paragraphs cover the removal, installation, and repair of various brackets attached to the frame.

2-77. Brake and Shift Lever Support (Figure 2-96)

Note. The brake and shift lever support shaft is not threaded on the M274A3 vehicle (Fig. 2-96).

a. Removal. Remove brake and shift lever support as directed in paragraph 2-45*a*.

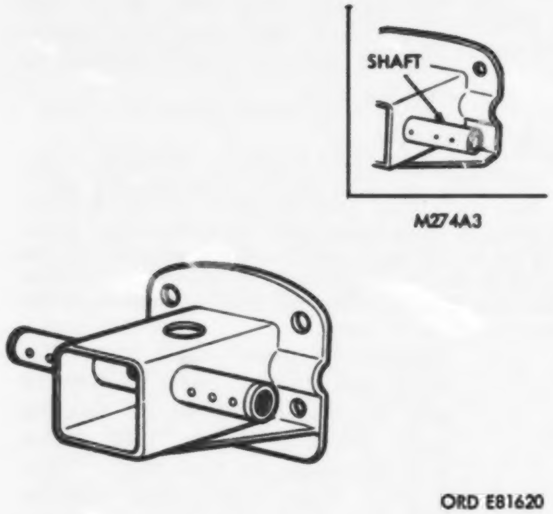


Figure 2-96. Brake and shift lever support.

b. Repair.

(1) If tubular shaft is bent, either straighten or replace entire unit. Inspect expansion plugs at each end of shaft and replace if missing or if there is any sign of looseness or leakage of lubricant. Check lubrication fitting and install a new one if necessary. Force lubricant through lubrication fitting and see that it comes out of the lubricating holes in the front of shaft. Check outside surface of shaft and, if found to be rough, smooth with a fine file.

(3) Inspect welds and reweld if welds metal and either straighten or replace entire assembly.

(3) Inspect welds and reweld if welds are broken or defective.

Warning: **Welding around magnesium is dangerous.**

c. Installation. Install brake and shift lever support as directed in paragraph 2-45*b*.

2-78. Steering Gear Trunnion Support (Figure 2-95)

a. Removal. Remove steering gear trunnion supports (par. 2-74*a*).

b. Repair. Check threaded mounting holes and, if there is indication of thread stripping, replace support assembly. When support bushing is cracked or loose, press bushing out of support. Press new bushing into support, making sure split side of bushing alines with split in support (split not applicable to M274A3). If support is bent or distorted, install a new one.

c. Installation. Install steering gear trunnion supports (par. 2-74*b*).

2-79. Steering Gear Trunnion Support M274A3

a. Removal. Remove steering gear trunnion supports as directed in paragraph 2-74*a*.

b. Repair. Check threaded holes and, if there is any indication of thread stripping, replace support with new split type. If a support bushing is cracked or loose, press bushing out of support and install a new one (split type) in its place. If a support is bent or distorted, install a new one.

c. Installation. Install steering gear trunnion supports as directed in paragraph 2-75*b*.

2-80. Seat Stowage Hook (Figure 2-97)

a. Removal. Hold spring in a compressed position to prevent flying when cotter pin is pulled out, and remove cotter pin and plain washer from end of seat stowage hook. Release and remove spring. Pull hook out of right frame tube. Remove second hook in like manner.

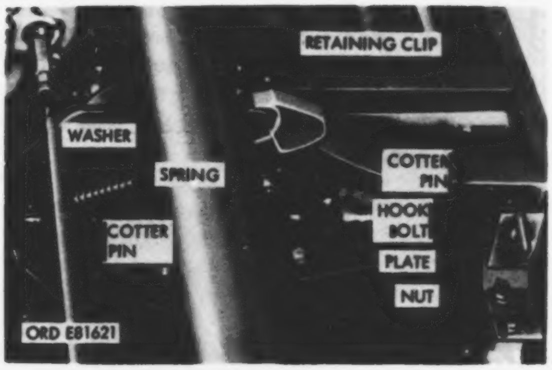


Figure 2-97. Seat stowage hook.

b. Installation. Push seat stowage hook through holes in right frame tube from outside, and position spring on inside end of hook and against frame tube. Compress spring and install plain washer and cotter pin. Install second hook in same manner.

2–81. Tow Bar Bracket (Figure 2–98)

Note. For instructions covering removal or installation of the tow bar, refer to TM 9–2320–246–10.

a. Removal. Remove two hex nuts, two lockwashers, and two machine screws securing tow bar bracket to underside of platform (right), and remove bracket. If necessary to replace hook bolt, remove cotter pin from bolt, then remove bolt and plate from bracket (fig. 2–99).

b. Installation. For installation of the tow bar bracket, reverse removal procedure in paragraph 2–81*a*(1) above.

2–82. Tow Bar Support (Figure 2–100)

a. Removal. Remove two hex nuts, two lockwahers, and two machine screws securing tow bar support to underside of platform, and remove shim and support (fig. 2–99).

b. Installation. For installation of the tow bar support, reverse removal procedure in *a* above.

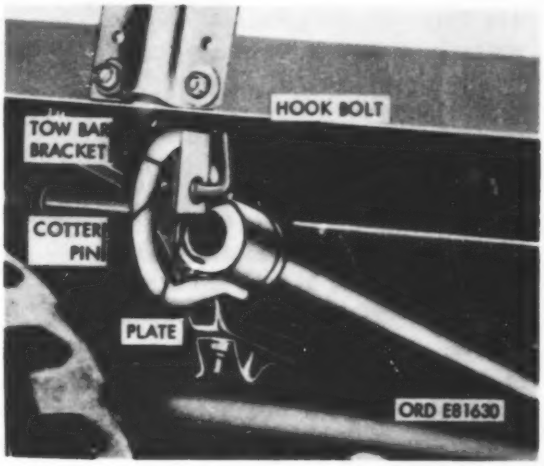

HOOK BOLT
TOW BAR BRACKET
COTTER PIN
PLATE
ORD E81630

Figure 2–98. Tow bar bracket and support—exploded view.

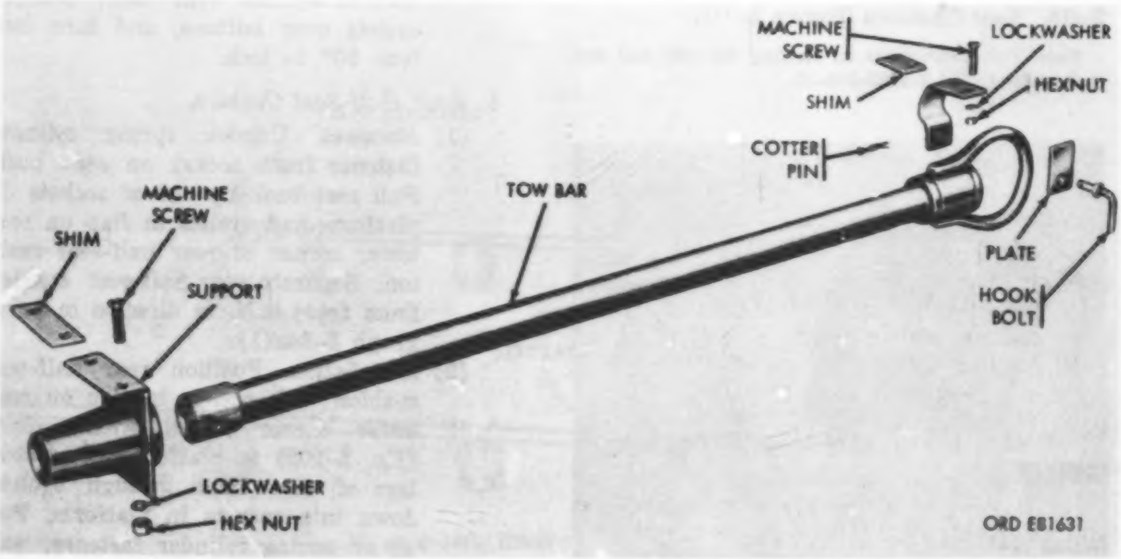

MACHINE SCREW
LOCKWASHER
HEXNUT
SHIM
COTTER PIN
TOW BAR
PLATE
HOOK BOLT
MACHINE SCREW
SHIM
SUPPORT
LOCKWASHER
HEX NUT
ORD E81631

Figure 2–99. Tow bar bracket and support—exploded view.

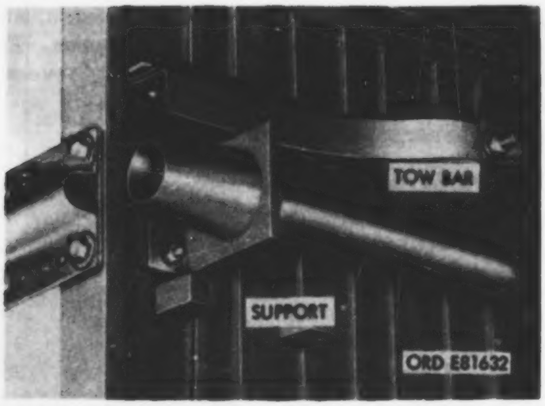


Figure 2-100. Tow bar support.

Section XX. BODY

2-83. General

The following paragraphs cover the removal, disassembly, assembly, and installation of various components attached to the platform.

2-84. Seat Cushions (Figure 2-101)

Note. For instructions on stowing the seat and seat back, refer to TM 9-2320-246-10.

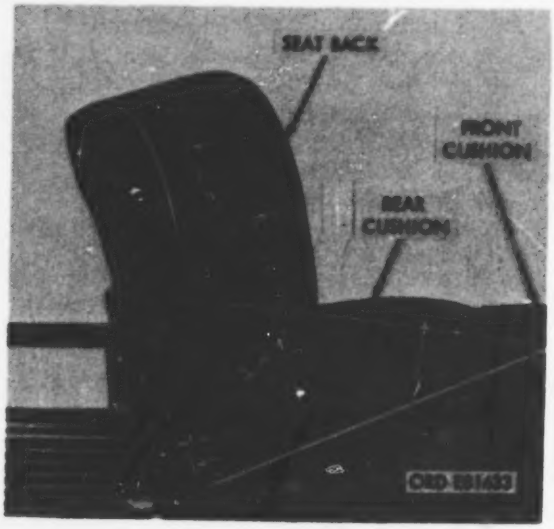


Figure 2-101. Seat cushions.

a. Front Half-Seat Cushion.

- (1) *Removal.* Unfasten four buttons, two on each side edge of seat cushion, and remove front half-cushion.
- (2) *Installation.* Position new front half-cushion against rear half; position eyelets over buttons, and turn buttons 90° to lock.

b. Rear Half-Seat Cushion.

- (1) *Removal.* Unhook spring cylinder fastener from socket on seat back. Pull seat back up out of sockets in platform and eyelets in flap on rear lower corner of rear half-seat cushion. Separate rear half-seat cushion from front half, as directed in paragraph 2-84*a*(1).
- (2) *Installation.* Position rear half-seat cushion with eyelets in flap on rear lower corner alined with sockets (fig. 2-102) in platform. Push two legs of seat back through eyelets, down into sockets in platform. Pull up on spring cylinder fastener, and hook into socket on right edge of seat back, securing back of platform. Attach front half-seat cushion to rear half, as directed in paragraph 2-84*a*(2).

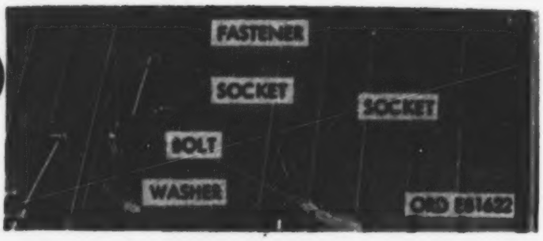


Figure 2-102. Spring cylinder fastener and seat sockets.

2-85. Spring Cylinder Fastener

a. Removal. Unhook spring cylinder fastener (fig. 2-102) from socket on seat back. Remove two hex nuts and lockwashers from bolts securing fastener to platform, and remove fastener from platform. Remove two bolts from fastener, and plain washers from bolts.

b. Installation. Position spring cylinder fastener as shown in figure 2-102. Install two plain washers and hex-head bolts through holes in fastener and platform, and secure on underside of platform with lockwashers and hex nuts.

2-86. Handrail (Figure 2-103)

a. Removal.

Caution: When removing rear handrail section, exercise caution so as not to damage electric hour meter.

(1) Remove the three hex-head screws with assembled washers holding the front, right, rear, and left handrail sections together.

(2) Remove the hex-head screws with assembled washers securing the sections to the edge of platform, and remove from vehicle as required.

b. Installation. Using such new or repaired sections as necessary, reverse removal instructions in paragraph 2-86*a*(1) and (2), and install sections as required.

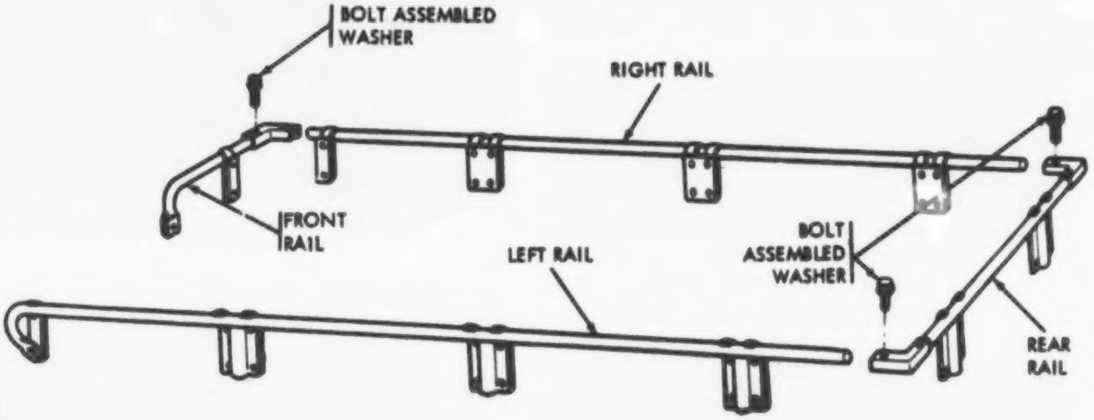


Figure 2-103. Handrail—exploded view.

Section XXI. ENGINE GUARD

2-87. General

The following paragraphs cover the removal and installation of the engine guard.

2-88. Engine Guard—M274A3 (Figure 2-104)

a. Removal. Remove four lockwashers and four hex-head screws securing engine

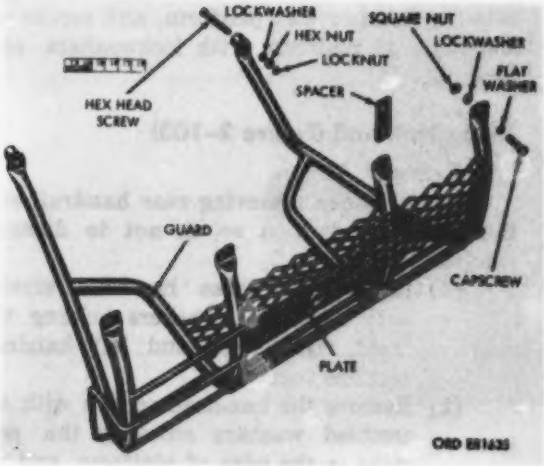

LOCKWASHER
HEX NUT
LOCKNUT
SQUARE NUT
LOCKWASHER
FLAT WASHER
SPACER
HEX HEAD SCREW
GUARD
CAPSCREW
PLATE
ORD E81635

Figure 2-104. Engine guard—M274A3—exploded view.

guard to rear edge of platform. Remove two locknuts, two hex nuts, and two lockwashers from both outside lower screws at rear axle, and remove guard.

b. Installation. Position engine guard on two lower screws at rear axle; and secure with four 3/8-24 × 7/8 hex-head screws, four 3/8 lockwashers, and to four 3/8 lockwashers. Install two lockwashers, two hex nuts, and two locknuts on the screws securing guard to axle.

2-89. Engine Guard—M274A4 (Figure 2-105)

a. Removal.

(1) Remove three 3/8 × 1 capscrews and three 3/8 lockwashers, attaching two engine guard-end uprights and left-center upright to the platform.

(2) Remove 3/8 × 1-1/2 capscrews (fig. 2-105) and lockwashers securing the engine guard right-center upright to the rear of the platform.

(3) Lower engine guard assembly.

(4) Remove engine guard (fig. 2-106) by pulling the left-and right-end uprights from the left and right bracket assemblies.

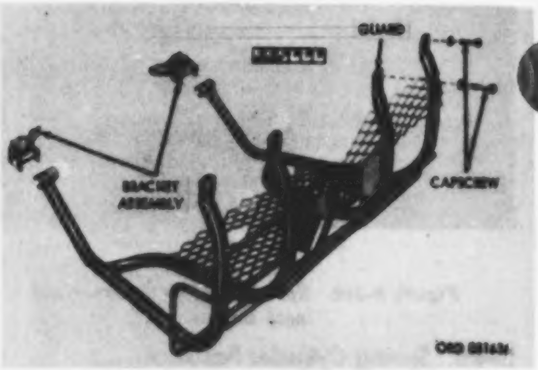

GUARD
BRACKET ASSEMBLY
CAPSCREW
ORD E81636

Figure 2-105. Engine guard—M274A4—exploded view.

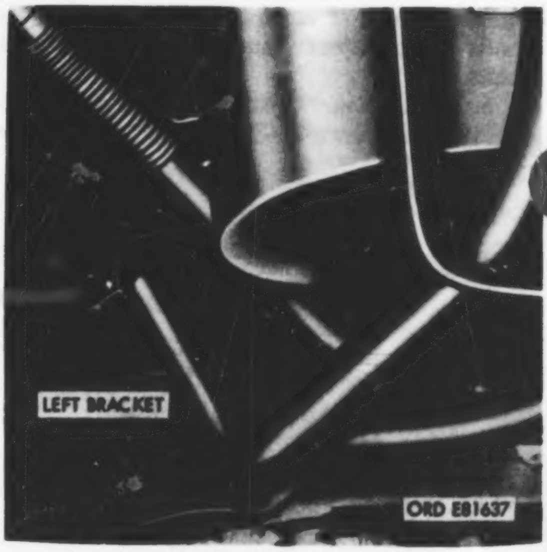

LEFT BRACKET
ORD E81637

Figure 2-106. Removing or installing engine guard—M274A4.

b. Installation. Reverse the above removal procedures. Tighten capscrews to a torque of 20 to 30 pounds-foot.

2-90. Engine Guard—M274A2 and M274A5 (Figure 2-107)

a. Removal.

(1) Remove four capscrews and lockwashers attaching the engine guard uprights to the platform.

(2) Lower the engine guard assembly.

(3) Remove engine guard by raising up on the left and right engine guard tube from the left and right bracket assemblies (fig. 2-107).

b. Installation. For installation of the M274A2 and M274A5 engine guard, reverse the removal procedures in paragraph 2-90*a* (1) through 2-90*a*(3).

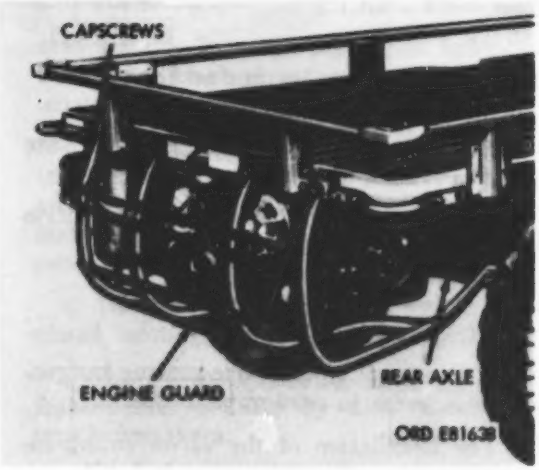

CAPSCREWS
ENGINE GUARD
REAR AXLE
ORD E81639

Figure 2-107. Removing or installing engine guard—M274A2 and M274A5—exploded view.

Section XXII. DATA PLATES

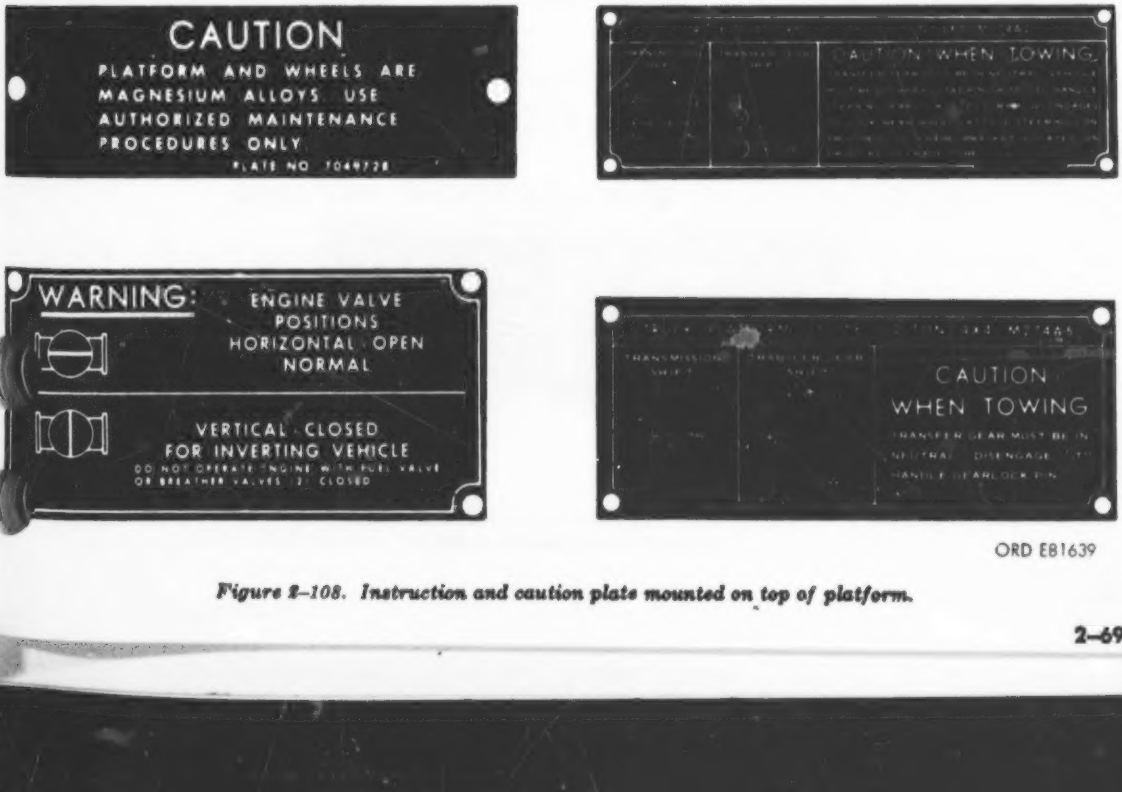
2-91. General

The following paragraphs cover the removal and installation of the vehicle data plates.

2-92. Instruction and Caution Plate (Figure 2-108)

a. Removal. Chisel off ends of rivets flush with undersurface of platform, and drive rivets upward out of platform with suitable punch. If data plate is to be again installed, work rivets out of plate, being careful not to damage plate.

b. Installation. Position data plate with holes alined with holes in top of platform, install 0.12 × 0.22 drive-rivets in holes and drive


CAUTION
PLATFORM AND WHEELS ARE MAGNESIUM ALLOYS. USE AUTHORIZED MAINTENANCE PROCEDURES ONLY
PLATE NO 7049728
CAUTION WHEN TOWING
WARNING: ENGINE VALVE POSITIONS
HORIZONTAL OPEN NORMAL
VERTICAL CLOSED FOR INVERTING VEHICLE
DO NOT OPERATE ENGINE WITH FUEL VALVE OR BREATHER VALVES CLOSED
M274A5
TRANSMISSION SHIFT
CAUTION WHEN TOWING
TRANSFER GEAR MUST BE IN NEUTRAL. DISENGAGE
HANDLE GEARLOCK PIN

ORD E81639

Figure 2-108. Instruction and caution plate mounted on top of platform.

rivets down until top of rivet heads are flush with top of plate.

2-93. Caution Plate Located on Top of Vehicle (Figure 2-108)

a. Removal. For removal of caution plate refer to paragraph 2-92*a*.

b. Installation. For installation of caution plate refer to paragraph 2-92*b*.

2-94. Valve-Venting Instruction Plate (Figure 2-108)

a. For removal of the valve-venting instruction plate, refer to paragraph 2-92*a*.

b. For installation of the valve-venting instruction plate, refer to paragraph 2-92*b*.

2-95. Vehicle Data Plate (Figure 2-109)

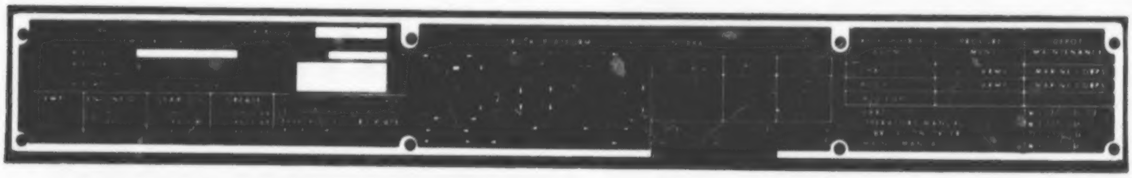
a. Removal. The four bottom rivets go through the edge of the platform; the four top rivets go into blind holes. Chisel off the inner ends of the four bottom rivets flush with inside surface of platform, and drive out rivets with suitable punch. Carefully chisel off heads of four top rivets and remove vehicle data plate. File four top rivets until flush with outside edge of platform.

b. Installation. Position new vehicle data plate on edge of platform, and centerpunch positions for eight new rivet holes slightly forward or to rear of old holes. Drill eight new rivet holes with No. 30 drill. Position plate, insert 0.12 × 0.22 drive-rivets, and drive rivets down until top of rivet heads are flush.

2-96. Ignition Switch Instruction Plate (Figure 2-110)

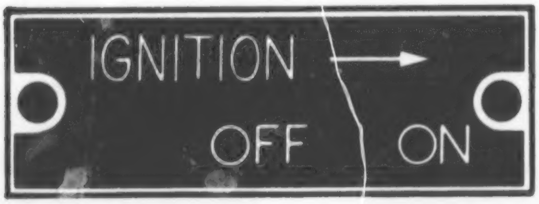
a. Removal. Remove two machine screws securing ignition switch instruction plate to front edge of platform below the ignition switch.

b. Installation. Position ignition switch instruction plate with holes alined with mounting holes in front edge of platform, and install two machine screws.



ORD E81640

Figure 2-109. Vehicle data plate located on edge of platform.



RA PD 378041

Figure 2-110. Ignition switch instruction plate located below ignition switch.

Section XXIII. RADIO INTERFERENCE SUPPRESSION

2-97. General

Radio interference suppression is the elimination or minimizing of the electrical disturbances which interfere with radio reception, adversely affect the operation of electronic equipment, or disclose the location of the vehicle to sensitive electrical detectors. It is important, therefore, that vehicles with, as well as vehicles without radios, be properly suppressed to prevent radio interference. Radio interference suppression is accomplished in this vehicle by use of capacitors, integrally suppressed spark plugs, shielding, braided bond straps, and tooth-type lockwashers. Shielding is used on all secondary high-voltage ignition circuits in the vehicle. To ensure effectiveness of the radio interference-suppression system, all suppression components and interference-producing subassemblies must be bonded to their respective mounts, with plated tooth-type lockwashers and/or tinned copper braid bond straps.

2-98. Radio Interference-Suppression System

The radio interference-suppression system applied to this vehicle is as follows:

a. Each of the spark plugs is integrally shielded and suppressed by a resistor-suppressor built into the spark plug.

b. The conduit and lead assemblies consist of high-tension leads enclosed in rubber-covered metallic hose terminating in appropriate threaded fittings at each end. These fittings must be kept tight at all times.

c. The magneto is bonded to the engine using two plated tooth-type lockwashers and a metallic gasket. A feed-thru-type capacitor is installed within the magneto in series with the switch cable.

d. The shroud is bonded to the engine by plated tooth-type lockwashers.

e. The flywheel housing is bonded to the transmission housing by nine plated tooth-type lockwashers.

2-99. Radio Interference-Suppression Maintenance

Whenever radio interference resulting from the operation of the vehicle is reported, or experienced, the cause of the interference can be determined by the following procedures:

a. Inspect the ignition system to determine that all retaining nuts at the magneto and spark plugs, are tight.

b. Check resistance of spark plugs; replace if necessary with integrally shielded and resistor-suppressed-type spark plugs.

c. If noise still persists, check breaker points and magneto capacitor and replace if necessary.

d. Inspect shielded cables for damage and replace if necessary.

Section XXIV. MAINTENANCE UNDER UNUSUAL CONDITIONS

2-100. Unusual Conditions

Refer to paragraph 2-3 and TM 9-2320-246-10. For additional information refer to TM 9-2853 and TM 9-2855.

CHAPTER 3

MATERIALS USED IN CONJUNCTION WITH MAJOR ITEM

Section I. GENERAL

3-1. General

This chapter provides description and service procedures for the armament kit, and removal and installation procedures of the litter kit for the 1/2-ton, 4 × 4, platform utility truck—M274A2 through M274A5.

Section II. ARMAMENT KIT

3-2. General

This section contains description, authorization, and service procedures for the armament kit. For instructions on the preparation of the M274 series vehicle for installation or repair of the armament kit, refer to TM 9-2320-246-34.

3-3. Description and Authorization

The armament kit provides for the adaptation of the M274 vehicle for installation of the 106-MM rifle applicable TA, TOE, or TD.

3-4. Service

Service of the armament kit is limited to lubrication and inspection. Refer to Appendix B, MAC chart.

Section III. LITTER KIT

3-5. General

The instructions in this section provide for the preparation of the M274 series vehicle for the installation of the litter kit.

3-6. Description

The litter kit provides for the transportation of one, two, three, or four litters on the vehicle (figs. 3-1 through 3-3).

3-7. Authorization for Application

The authorization for applying the litter kit is the applicable TOE, TA or TD.

3-8. Repair Parts

The litter kit vehicle and repair parts supplied in support of the litter kit are listed in TM 9-2320-246-20P which is the authority for requisitioning repair parts.

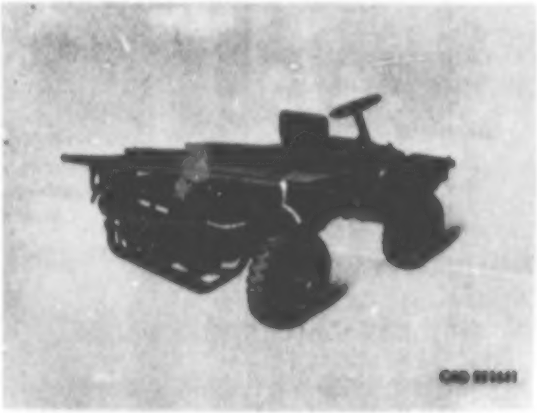


Figure 3-1. Litter kit installed, transporting two litters.

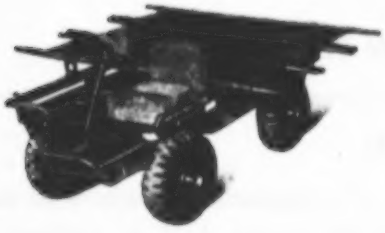


Figure 3-2. Litter kit installed, transporting three litters.

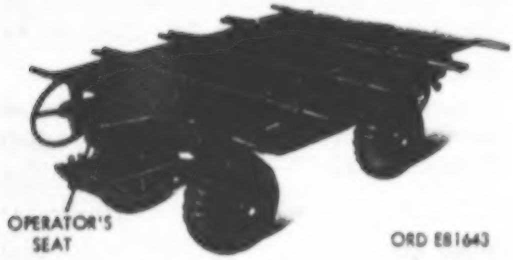


Figure 3-3. Litter kit installed, transporting four litters.

3-9. Service upon Receipt of Materials

When the litter kit is received, check to se if all necessary parts are included before a tempting installation. Installation drawin 10944803 is included with each litter kit.

3-10. Installation

a. Attach litter kit rail assembly to right-hand rail with seven machine screws, flat washers, and self-locking nuts (fig. 3-4).

b. Position clamp on left-hand rail as shown in figure 3-5. Adjust to accommodate the number of litters to be transported by the vehicle (fig. 3-6).

Note. If four litters are to be transported, remove seat back and seat cushion and stow on top left front of platform. Lower steering wheel and column to intermediate position.

c. Disconnect litter-retaining pins from rail assembly (fig. 3-4) by depressing spring-loaded ball detent and pulling pins fro brackets. Refer to TM 9-2320-246-10.

d. For information on removal and installation of litters, refer to TM 9-2320-246-10.

3-11. Removal

To remove the litter kit from the vehicle, reverse the operation of paragraph 3-10, *a* to *c*.

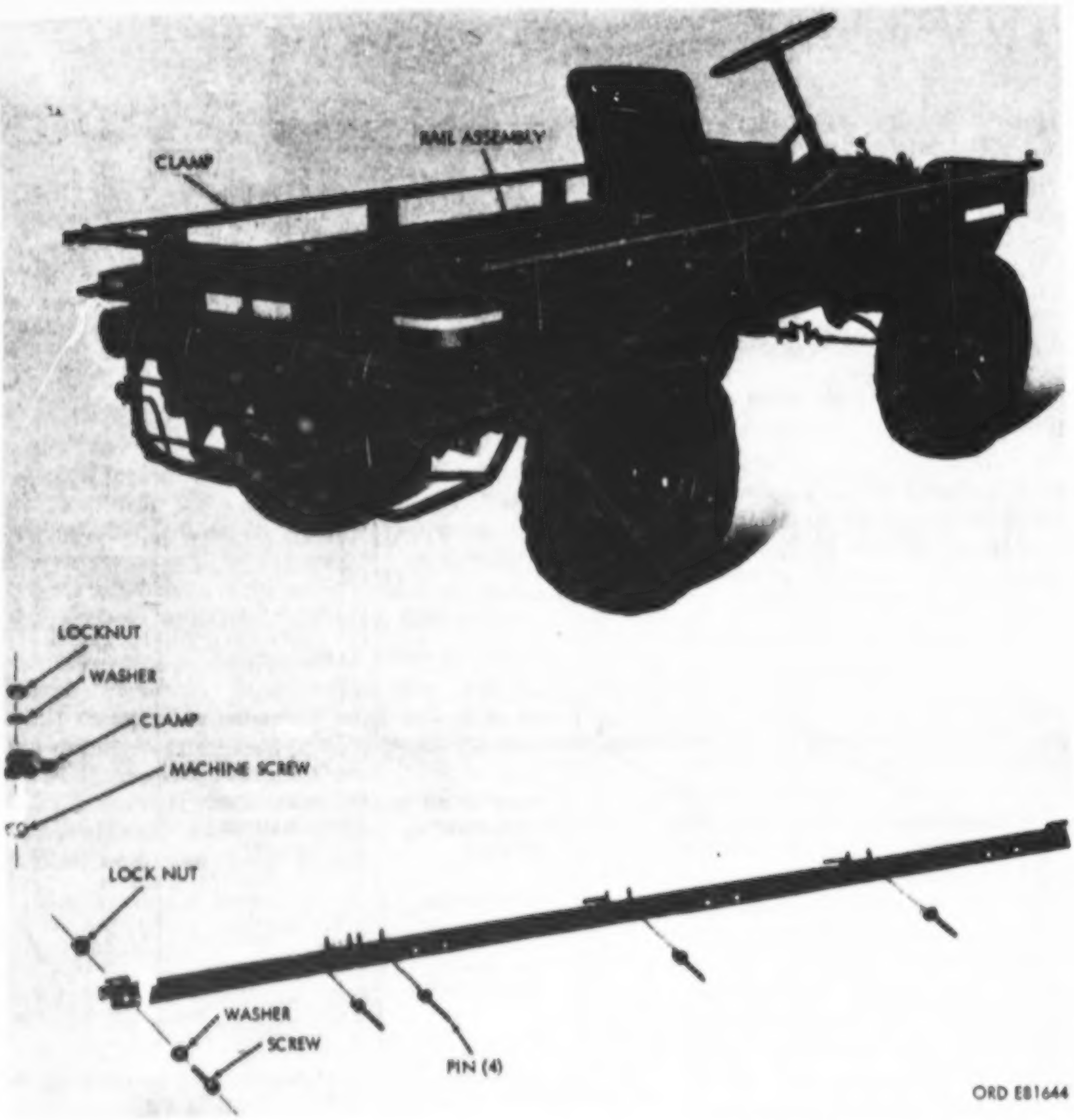

CLAMP
RAIL ASSEMBLY
LOCKNUT
WASHER
CLAMP
MACHINE SCREW
LOCK NUT
WASHER
SCREW
PIN (4)
ORD E81644

Figure 3-4. Location of rail assembly, machine screws, flat washers, and self-locking nuts.

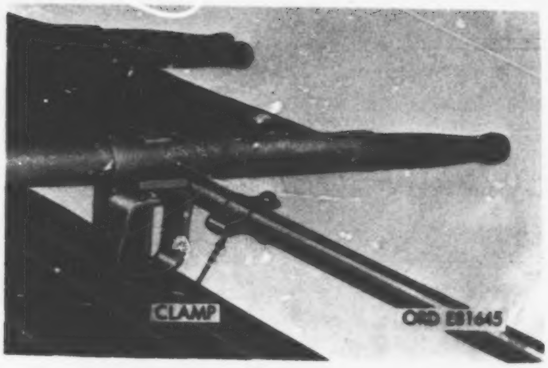

CLAMP
ORD E81645

Figure 3-5. Location of clamp for four-litter transport.

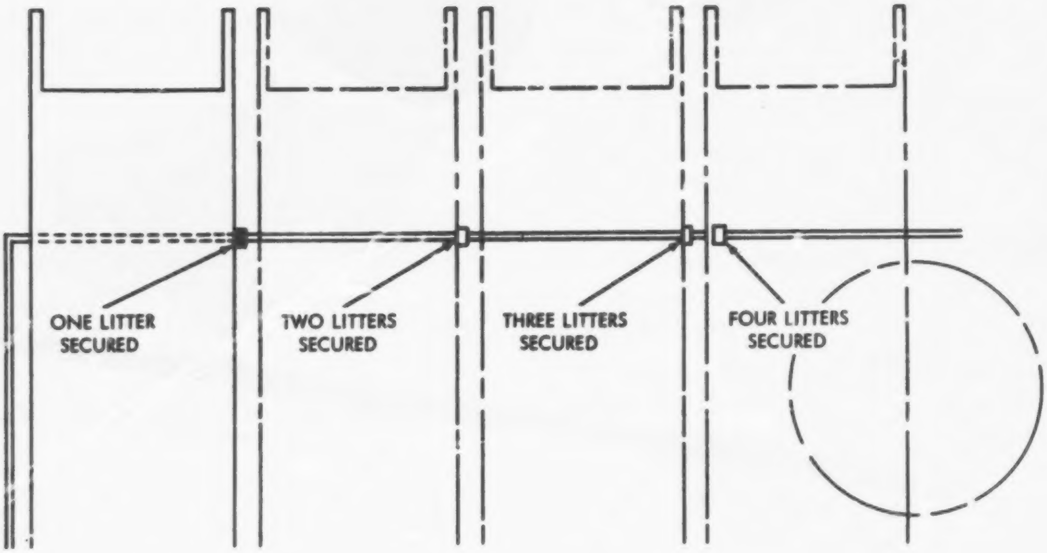

ONE LITTER SECURED
TWO LITTERS SECURED
THREE LITTERS SECURED
FOUR LITTERS SECURED
ORD E81646

Figure 3-6. Position of clamp for the desired number of litters.

CHAPTER 4

SHIPMENT, STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT

4–1. Shipping Instructions

a. Preparation of Vehicle for Shipment. When shipping the 1/2-ton, 4 × 4, Platform Utility Truck M274 series vehicle with A042 engines, the officer in charge of preparing the shipment will be responsible for furnishing materiel in a serviceable condition; properly cleaned, processed, packaged, and packed.

b. Removal of Preservatives Prior to Shipment. Personnel withdrawing the vehicle from storage for shipment must not remove preservatives other than to ensure that the materiel is complete and serviceable. If it has been determined that preservatives have been removed, they must be restored to the prescribed level prior to shipment.

Note. Removal of preservatives is the responsibility of the organization receiving the shipment.

c. Army Shipping Documents. Prepare all army shipping documents in accordance with AR 725–50.

4–2. Storage Instructions

a. General.

(1) The vehicle, received for storage and already processed for shipment, as indicated in DD Form 1897, must not be reprocessed unless inspection performed on receipt of materiel reveals corrosion, deterioration, etc.

(2) Completely process the vehicle upon receipt directly from manufacturing facilities, or if the processing data on the tag indicates that preservatives have been rendered ineffective by operation of freight-shipping damage.

(3) The vehicle, to be prepared for storage, must be given a limited technical inspection and processed as prescribed in SB 9–4. The results of the inspection and classification will be entered on DA Form 2404.

b. Receiving Inspections.

(1) Immediately upon receipt of the vehicle, for storage, it must be inspected and serviced as prescribed in paragraphs 2–1 through 2–8. Perform a systematic inspection, and replace or repair all missing or broken parts. If repairs are beyond the scope of the unit and materiel will be inactivated for an appreciable length of time, place materiel in storage and attach tags specifying the repairs needed. The reports of these conditions will be submitted by the unit commander for action by a supporting-maintenance unit.

(2) When materiel is inactivated, it will be processed in accordance with SB 9–4.

(3) Prepare a DD Form 6 for all shipments received in a damaged or otherwise unsatisfactory condition due to deficiencies in preservation, packaging, packing, marking, handling, loading, or storage, and for apparently excessive preservation.

c. Storage Site. The preferred storage site for the vehicle is under cover in dry, covered sheds. When it is necessary to store vehicle outdoors, protect it against the elements as prescribed in TB ORD 379.

d. Inspection During Storage. Perform a visual inspection periodically to determine general condition. If corrosion is found, remove it and clean, paint, and treat with the prescribed preservatives.

Note. Touchup painting will be in accordance with TM 9-213.

e. Removal from Storage.

(1) If the vehicle is not shipped or issued upon expiration of the storage period, process as applicable in accordance with SB 9-4.

(2) If the vehicle to be shipped will reach its destination within the storage period, it need not be reprocessed upon removal from storage unless inspection reveals it to be necessary according to anticipated in-transit weather conditions.

(3) When it has been ascertained that the vehicle is to be placed into immediate service, deprocess it in accordance with SB 9-4. Inspect and service it as prescribed in paragraph 2-3.

4-3. Marking

Marking and identification of the vehicle will be accomplished according to TM 9-200.

4-4. Loading and Blocking Instructions

Warning: **The height and width of the vehicle, when prepared for rail transportation, must not exceed the limitations indicated in the loading table in TM 9-200. Whenever possible, local transportation officers must be consulted about the limitations of the particular rail-road lines to be used, in order to avoid delays, dangerous conditions, and damage to equipment.**

a. Preparation for Shipment. Remove cross braces, nails and other dunnage from inside of rail car, and sweep clean.

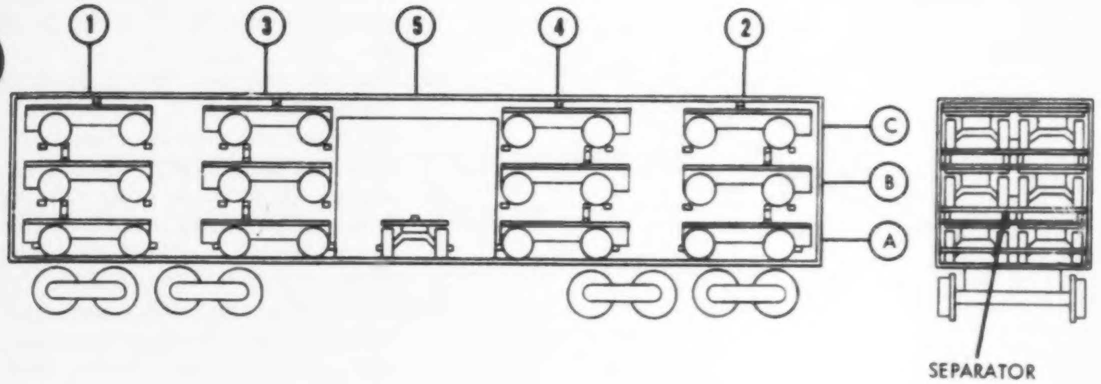
b. Vehicle Loading. The handling and loading of vehicles in damage-free (DF) or standard rail cars, shall be performed by using a forklift truck with the aid of a loading fixture.

c. Loading Method I. Loading Method I covers the loading of twenty-five vehicles in a 50-foot 6-inch DF rail car (fig. 4-1) by using thirty-nine cross braces, four door braces, twelve separators (fig. 4-2) furnished with rail car, and necessary blocking and strapping supplied with vehicle.

(1) Position one cross brace in rail car 22 inches from end of car and 4 inches to 6 inches above floor. Place two vehicles (fig. 4-1) on floor (tier A) in car, with the rear wheels of each vehicle held firmly against cross brace. Place one sheet each PPP-F-320-96 × 24-inch 200 psi, "C" flute corrugated fiberboard, between side of car and each vehicle, stapling sheet to side of the car. Position second cross brace tightly against front tires of both vehicles, approx. 4-6 inches above the car floor. Place and secure separator (fig. 4-3) between vehicles. Apply handbrake to prevent movement of vehicle while in transit.

(2) Position three cross braces in car, above the vehicles placed on floor. Locate the first brace 24 inches from end of car. Place the second brace 22 inches on center from the first brace, and the third brace 56 inches on center from the second brace. Using the second brace as a holddown, shim under the brace as required. Place between shim and vehicle, one sheet corrugated fiberboard PPP-F-320-9-foot × 12-inch, 200 psi, "C" flute, and one sheet 10-foot × 18-inch MIL-B-121 Type II, Grade A, Class 2 paper with glazed side facing the vehicle. Position two vehicles on braces (tier B) as placed above, and follow procedure as described in paragraph 4-4*c*(1).

(3) Load two vehicles in third tier (tier C), following procedure in paragraph 4-4*c*(1) and (2).



ORD E81659

Figure 4–1. Vehicle-loading Method I, 50-ft 6-in. damage – free box car.

(4) Complete the loading of the car by following the arrangement and loading sequence 1–5 in figure 4–1, and procedures in paragraph 4–4*c*(1) through (3). Position the twenty-fifth (final) vehicle crosswire on the floor of the car between the doors. Block and brace the final vehicle securely by using door braces and cross braces as provided.

d. Loading Method II. Loading Method II covers the loading of twenty-five vehicles in a 50-foot 6-inch std box car (fig. 4–3) by using sixteen pallets, twelve separators (fig. 4–2) thirty-two 2 × 4 cross braces, thirty-one 2 × 6 cross braces, four 2 × 6 door braces, plus miscellaneous blocking and bracing supplied with vehicle.

(1) Position and nail one 2 × 4 cross brace in car 22 inches from end of car and 6 to 8 inches above floor. Place two vehicles (fig. 4–3) on floor (tier A) in car with the rear wheels of each vehicle held firmly against cross brace. Place one sheet each, 96 inches × 24 inches, 200 psi, "C" flute corrugated fiberboard, between side of car and each vehicle, stapling sheet to the side of the car. Position and nail a second 2 × 4 cross brace as it is being held tightly against front tires of both vehicles, approximately 6 to 8 inches above the car floor. Place one sheet 10 foot × 18 inch MIL–B–121 Type II, Grade A, Class 2 paper with glazed size facing the vehicle, across both vehicles at their approximate center. Overlay this sheet with one piece of corrugated fiber board PPP–F–320, 9 Feet × 12 inches 200 psi "C" flute

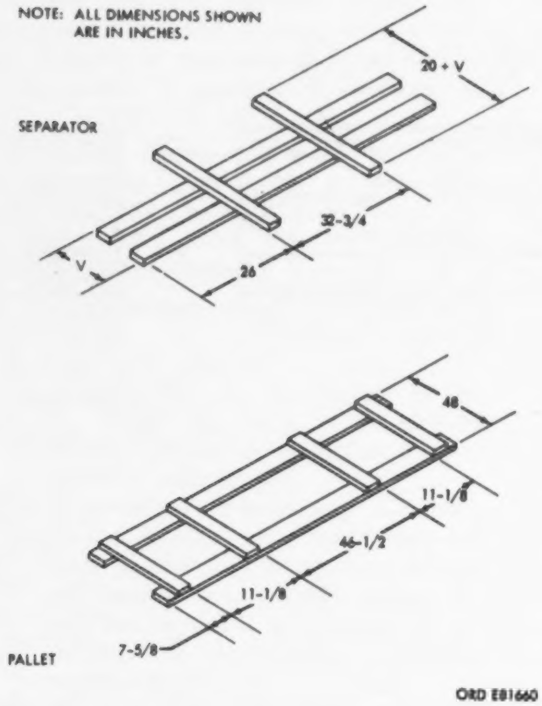


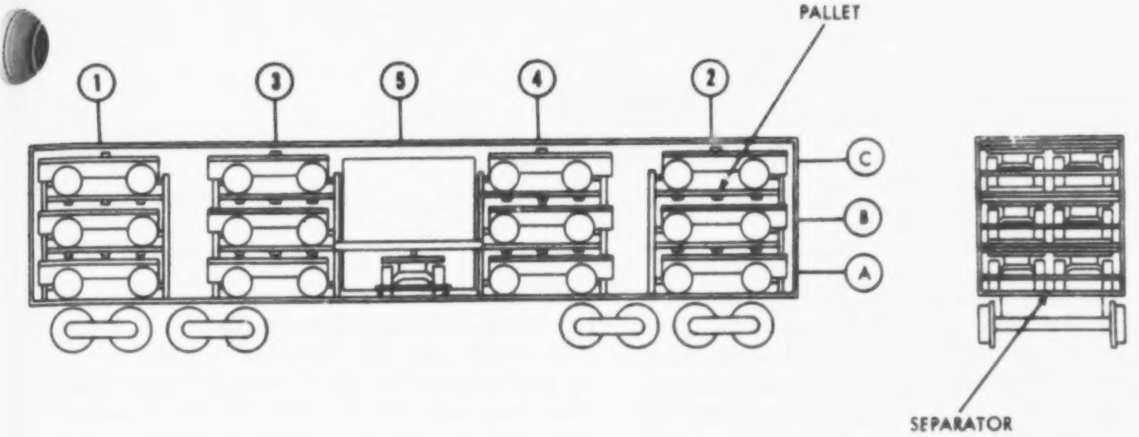
Figure 4-2. Vehicle separator and pallet.

and hold in place with one 2 × 6 holddown cross brace nailed securely to side of car. Place and nail separator between vehicles. Set handbrake in on position, to aid in preventing movement of vehicles while in transit.

(2) Position and nail two 2 × 6 cr braces and one 2 × 4 cross brace in car above the vehicles placed on car floor, approximately 26 inches on centers, with first brace 35 inches from end of car, with the 2 × 4 brace being nailed to and immediately above the 2 × 6 holddown. Place two pallets (fig. 4-3) and nail to above braces. Position two vehicles, one each per pallet (tier B) and repeat procedure in paragraph 4-4 *d*(1).

(3) Load two vehicles in third tier (tier C) following procedure in paragraph 4-4*d*(1) and (2).

(4) Complete the loading of the car by following the arrangement as shown in figure 4-3 and following procedures in paragraph 4-4*d*(1) throu (3), with the twenty-fifth (final) hicle being positioned crosswise the floor of the car between the doors. Block and brace the final vehicle securely by using door braces and cross braces supplied with rail car.



ORD E81661

Figure 4–3. Vehicle-loading Method II, 50-ft 6-in. std box car.

Section II. DEMOLITION TO PREVENT ENEMY USE

4–5. Demolition of Materiel

Refer to TM 9–2320–246–10 for instructions on demolition of materiel to prevent enemy use.

CHAPTER 5

DEPROCESSING VEHICLE

5-1. General

Prior to shipment, the vehicle was prepared in accordance with MIL-STD-281A and the processing recorded on DA Form 9-3. This form is placed in the publications bag attached to the backrest. If the seat and backrest are not in position on the vehicle, perform the reassembly operations described in TM 9-2320-246-10 to remove the seat and backrest from the stowed position. The processing record form will indicate the level and type of processing performed on the vehicle. Deprocessing instructions applicable to each level are indicated below:

Level A	Level B	Level C	Other*
x	x	x	x
x	x	x	x
x			
x			
x			
x	x	x	x
x	x	x	x

*The "other" column designates driveaway, haulaway, roll-on, and roll-off shipments.

Caution: **Do not attempt to start engine, apply brake, or operate the vehicle in any other manner until deprocessing has been completed.**

5-2. Reassembly

If the handrail has been lowered and the seat, backrest, and footrest have been stowed, refer to TM 9-2320-246-10 for instructions covering raising the handrail and unstowing the seat, backrest, and footrest. After the seat and backrest have been removed from their stowed position, the waterproof paper should be removed before installation.

5-3. Removal of Preservatives

Depreservation instructions are provided in an envelope placed in the publications bag attached to the backrest. Make certain that the preservative oil is drained from the crankcase and that it is refilled according to instructions contained in LO 9-2320-246-12. Preservative oil is used only in processing at level A.

5-4. Tire Pressure

Check tire pressure and inflate or deflate as necessary to obtain a pressure of 12 psi.

5-5. Removal of Processing Tags

Remove all processing tags after deprocessing has been completed.

APPENDIX A

REFERENCES

1. General Publications

Dictionary of United States Army Terms	AR 320-5
Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings.	DA Pam 108-1
Military Publications Index (as applicable)	DA Pam 310 Series
Military Symbols	FM 21-30
The Army Equipment Record System and Procedures	TM 38-750
Military Terms, Abbreviations, and Symbols: Authorized Abberviations and Brevity Codes	AR 320-50
	AR 385-40
	AR 700-1300-8
Military Training	FM 21-5
Techniques of Military Instructions	FM 21-6

2. Military Publication Indexes

DA Pamphlets 310-1, -2, -3, -4, -5, -7, -29, and DA Pamphlet 108-1 should be consulted frequently for latest changes or revisions of reference material listed in this appendix, and for publications pertinent to major item materiel on technical manual being prepared.

3. Supply Manuals Maintenance and Repairs

Lubricating Fittings, Oil Filters, and Oil Filter Elements	ORD 5 SNL H-16
Tires and Tubes, Pneumatic	SM 9-1-2610
Tire Rebuilding and Tire and Tube Repair Materials	SM 9-2640
Tool Kit, Automotive Mechanics (41-T-3535-30)	SM 10-4-5180-A13
Tool Kit, Automotive Maintenance: Organizational Maintenance, No. 1, Common (4910-754-0654)	SC 4910-95-CL-A74
Tool Kit, Automotive Maintenance: Organizational Maintenance, No. 1 Supplemental (4910-754-0653)	SC 4910-95-CL-A73
Tool Kit, Organizational Maintenance, No. 2, Common (4910-754-0650)	SC 4910-95-CL-A72
Tool Set, Organizational Maintenance (2nd echelon), No. 7, Supplemental (4910-754-0652)	SC 4910-95-CL-A51

4. Forms

DA Form 9-1, Materiel Inspection Tag

DA Form 9-3, Processing Board for Shipment and Storage of Vehicles and Boxed Engines (Tag)

DA Form 9-4, Vehicular Storage and Servicing Record (Card)
DA Form 348, Driver Qualification Record
DA Form 461-5, Limited Technical Inspection
DA Form 2028, Recommended Changes to DA Technical Manuals, Parts Lists or Supply Manuals 7, 8, or 9
DA Form 2402, Exchange Tag
DA Form 2404, Equipment Inspection and Maintenance Worksheet
DA Form 2405, Maintenance Request Register
DA Form 2407, Maintenance Report
DA Form 2407-1, Maintenance Request—Continuation Sheet
DA Form 2408-2, Lubrication Records
DA Form 2408-3, Equipment Maintenance Record (Organizational)
DA Form 2408-5, Equipment Modification Record
DA Form 2409, Equipment Maintenance Log (Consolidated)
DA Form 2410, Component Removal and Repair/Overhaul
DD Form 6, Report of Damaged or Improper Shipment
DD Form 314, Preventive-Maintenance Schedule and Record
DD Form 1397, Processing and Deprocessing Record for Shipment, Storage and Issue of Vehicles

5. Other Publications

a. Camouflage.	
Camouflage, Basic Principles	FM 5-20
b. General.	
Army Equipment Record Procedures	TM 38-750
Cooling Systems: Vehicle and Powered Ground Equipment	TM 9-2858
Driver Selection and Training	TM 21-300
Military Vehicles (Ordnance Corps Responsibility)	TM 9-2800-1
Principles of Automotive Vehicles	TM 9-8000
Spark Plugs	TM 9-8638
Supplies and Equipment (Motor Vehicles)	TM 9-208-1 TM 9-247
c. Maintenance and Repair.	
Tires, Repair and Rebuild of Pneumatic Tires and Tubes	TM 9-1871
d. Vehicular Operation and Maintenance.	
Care and Maintenance of Pneumatic Tires	TM 9-1870-1
Engine Maintenance Manual	TM 5-2805-213-14
Lubrication Order (Pertinent to Vehicle)	LO 9-2320-246-12 TM 9-213 AR 725-50 LO 5-2805-213-14
Marking of Artic-Lubricated Materiel and Equipment	SR 746-30-10
Operator's Manual (Pertinent to Vehicle)	TM 9-2320-246-10
Organizational Repair Parts and Special Tools (Pertinent to Vehicle)	TM 9-2320-246-20P
Packaging and Shipping Materiel: Preservation, Packaging, and Packing of Military Supplies and Equipment	TM 38-230
Painting Instructions for Field Use	TM 9-213
Protection of Ordnance General Supplies in Open storage	TB ORD 379
Report of Damaged or Improper Shipment	AR 700-58
Standards for Overseas Shipment and Domestic Issue of Ordnance Materiel Other than Ammunition and Army Aircraft	TB ORD 385

APPENDIX B

MAINTENANCE ALLOCATION CHART

1/2-ton, 4 x 4, Platform Utility Truck M274 Series Vehicle with A042 engines. (This allocation supersedes all previous maintenance allocations covering the above series vehicles.)

Purpose: To allocate specific maintenance operations to the proper maintenance level and category.

Basis: Allocation of maintenance operations is made on the basis of time, tools, and skills normally available to the various maintenance categories in a combat situation and influenced by maintenance policy and sound maintenance practices, as outlined in AR 750-5 and FM 9-10.

Note. This appendix is divided into four sections as follows:

Section I. Explanation and Definitions
Section II. Maintenance Allocation Chart (MAC)
Section III. Tools and Test Equipment Requirements
Section IV. Notes for MAC Remarks Column

Section I. EXPLANATION AND DEFINITIONS

1. General

a. Explanation and Definitions. The maintenance allocation chart designates overall responsibility for the maintenance function on an end item or assembly. Repair and/or rebuild of major assemblies is designated by authority of the Army Commander representative, except for the specific repair subfunctions listed in the Maintenance Allocation Chart. Deviation from maintenance operations allocated in the Maintenance Allocation Chart are authorized only upon approval of the Army Commander representative.

b. Explanation of Columns.

(1) Column (a) of the MAC designates the functional grouping code assigned from TB 750-93-1.

(2) Column (b) of the MAC designates the functional group assigned from TB 750-93-1.

(3) Column (c) of the MAC designates the various maintenance functions to be performed at various maintenance levels. Listed in *a* thru *k* below are the maintenance functions and definitions.

(*a*) *Inspect.* To verify serviceability and detect incipient electrical or mechanical failure by close visual examination.

(*b*) *Test.* Verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of the item, with authorized tools and test equipment, and comparing those measurements with established standards.

(*c*) *Service.* Operations required periodically to keep the item in proper operating condition.

(*d*) *Adjust.* To regulate periodically to prevent malfunction.

(*e*) *Align.* To adjust two or more components of an electrical or mechanical system so that their functions are properly synchronized.

(*f*) *Calibrate.* To determine, to check, or to rectify the graduation of a measuring instrument.

(*g*) *Install.* Install the same item for service or when required for the performance of other maintenance operations.

(*h*) *Replace.* Substitute serviceable components, assemblies, and subassemblies for unserviceable counterparts.

(*i*) *Repair.* Restore to a serviceable condition by replacing unserviceable parts or by any other action required, using available tools, equipment, and skills including welding, grinding, riveting, straightening, adjusting and facing.

(*j*) *Overhaul.* Restore an item to completely serviceable condition by employing techniques of "Inspect and Repair Only As Necessary" (IROAN).

(*k*) *Rebuild.* Restore to a condition comparable to new by disassembling to determine the condition of each component part, and assembling, using serviceable, rebuilt, or new assemblies, subassemblies, and parts.

(*l*) *Maintenance Level Codes.* The following code letters with their definitions pertain to the authorized maintenance levels. These code letters are plotted in the block where the maintenance function (line in column c) intercepts the functional group (line in column b).

1. C. The capital letter "C" designates the maintenance level authorized to the operator of the materiel.

2. O. The capital letter "O" indicates organizational-maintenance level, providing local end item repair and return to service or on-site repair service.

3. F. The capital letter "F" indicates direct support maintenance level, providing either local mobile or direct service unit fixed shop repair and return-to-user service.

4. H. The capital letter "H" indicates general support - maintenance level, providing mobile or fixed shop repair and return-to-user or supply-stock service.

5. D. The capital letter "D" indicates depot-maintenance level; however, this level is not applicable to this materiel.

6. Symbol %%. This symbol indicates that organizational-maintenance level may perform the particular maintenance function, provided the/request originates from organizational level and is specially authorized by the direct support-maintenance officer.

(4) Column (d) indicates, when annotated with SPTO, that special tools are required for performing the maintenance function, and the special tools authorized for use on this materiel may be found in section III of this appendix. Special tools for organizational maintenance are also listed in TM 9-2320-246-20P which is the authority for requisitioning replacements.

2. Column (e)

Column (e) remarks will indicate applicable notes to be found in section IV of this appendix that will pertain to the specific maintenance function involved.

Note. For all engine service and lubrication maintenance functions, see lubrication chart in TM 5-2805-218-14.

Section II

Maintenance Allocation Chart
for
Truck, Platform, Utility: 1/2-Ton, M274A2, M274A3, M274A4 and M274A5

(a) Group No.	(b) Functional group	(c) Maintenance Function Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild	(d) Tools and equipment	(e) Remarks
01	Engine													
0100	Engine assembly	C	F	O				%%	%%	F	H		*	(See Note 1)
0106	Breather assembly, lubrication	C		O				O	O				*	*
0107	Starter assembly	C		O	O			O	O	F			*	*
0107	Cable, starter front	C		O	O			O	O					
0107	Cable, starter rear	O		O				%%	%%	F			*	*
0107	Housing, starter pulley	C						O	O	F				
0107	Pulley, starter	O		O				O	O	F				
0108	Manifolds	C						O	O	F			*	*
0127	Filter, oil	C		C				O	O				*	*
0127	Lines and fittings, lubrication	C		O				O	O				*	*
02	Clutch													
0200	Clutch assembly	O						%%	%%	F			*	
0202	Linkage, clutch	C			O			%%	%%	F				
03	Fuel system													
0301	Carburetor	C		O	O			O	O	F			*	(See Note 2)
0304	Air cleaner, carburetor	C		C				O	O					
0304	Precleaner, air	C		C				O	O					
0306	Tank, fuel	C		O				O	O	F				
0308	Governor assembly, engine	O		O				O	O				*	*
0308	Linkage	C		O				O	O					
0309	Filter assembly, fuel	C		C				O	O				*	*
0309	Element, fuel filter	O		O				O	O					
0311	Pump, fuel, primer	C		O				O	O				*	*
0312	Controls, choke, throttle, and accelerator	C		O	O			O	O					
04	Exhaust system													
0401	Muffler, exhaust	C						O	O					
05	Cooling system													
505	Fan assembly, cooling	C		O				O	O				*	*
06	Electrical system													
0605	Magneto assembly	C	F	O	O			O	O	F			*	(See Note 3)
0605	Spark plug	C	O	O	O			O	O				*	*
07	Transmission													
	* – See TM 5-2805-213-14													

best copy available

Section II

Maintenance Allocation Chart for Truck, Platform, Utility: 1/2–Ton, M274A2, M274A3, M274A4 and M274A5

(a) Group No.	(b) Functional group	(c) Maintenance Function											(d) Tools and equipment	(e) Remarks
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
0700	Transmission assembly	C		O				%%	%%	F	H		SPTO	(See Notes 4 and 5)
0705	Controls, transmission	C			O			%%	%%	F				
0721	Vent assembly, transmission	C		C				O	O					
09	Propeller shaft													
0900	Propeller shaft	C		O				O	O	F				
10	Front axle													
1000	Axle assembly, front	C		C	F			%%	%%	F	H		SPTO	(See Notes 4 and 6)
1004	Knuckle, steering	O		O				%%	%%	F				
1004	Seal, steering knuckle	O						%%	%%					
11	Rear axle													
1100	Axle assembly, rear	C		C	F			%%	%%	F	H		SPTO	(See Notes 4 and 7)
1104	Knuckle, steering (all except M274A5)	O						%%	%%	F				
1104	Seal, steering knuckle	O						%%	%%					
12	Brakes													
1201	Lever, handbrake	C			O			O	O					
1201	Cables, handbrake	C			O			O	O					
1202	Service brake and components	C			O			O	O	F				
1206	Foot pedal and shaft	C			O			O	O	F				
13	Wheels and tracks													
1311	Wheel	C						C	C					
1311	Hub and components	C		O				%%	%%	F				
1313	Tires	C		O				O	O			H		(See Note 8)
1313	Tubes	O		O				O	O	O				
14	Steering													
1401	Column and wheel, steering	C		C				O	O	F				
1401	Support, steering column	C		O				O	O					
1401	Bellcrank and components	C		O				O	O	%%				
1401	Tie rod, steering	C			O			O	O	O				
	* – See TM 5-2805-213-14													

Section II

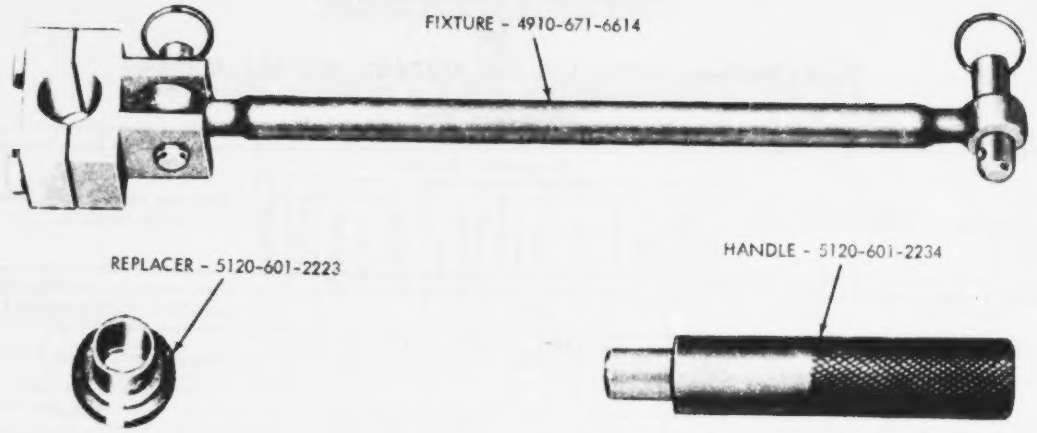
Maintenance Allocation Chart for Truck, Platform, Utility: 1/2-Ton, M274A2, M274A3, M274A4 and M274A5

(a) Group No.	(b) Functional group	(c) Maintenance Function											(d) Tools and equipment	(e) Remarks
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
1401	Draglink, steering	C		O	O			O	O	O				(See Notes 4 and 9)
1407	Gear assembly, steering	C		O	%%			O	O					
15	Frame, towing attachments and drawbars													
1501	Supports, platform	C						O	O	F				
1501	Tubes, platform	C		C				O	O	F				
1503	Tow bar	C						C	C	F				
18	Body, cab, hood and hull													
1801	Footrest, operator's	C		O				C	C	F				
1801	Guard, brush	C						O	O	F				
1806	Backrest, seat	C		C				C	C	F				
1806	Cushion, seat	C		C				C	C	F				
1806	Fastener, seat	C		O				O	O					
1810	Platform, truck	C		O				%%	%%	F				
1810	Handrails, platform	C						C	C	F				
33	Special purpose kits													
3307	Kit, litter	C						O	O	F				
34	Armament, fire control repair parts kits													
3401	Kit, armament	C		O				%%	%%	F				
42	Electrical equipment													
4210	Hour meter and harness	C	O					O	O					
47	Gages (non-electrical)													
4703	Hour meter, mechanical	C						O	O				*	*

Section III

Table 3. Special Tools Authorized for Organizational Maintenance

Item	Functional group	Federal stock number	Reference		Use
			Fig.	Par.	
Fixture	1311	4910-671-6614 (7059970)	B-1		Required to lock steering during wheel alinement
Handle	1401	5120-601-2234 (7010321)	B-1		Used with replacer 5120-601-2223
Replacer	1401	5120-601-2223 (7010301)	B-1		For replacing steering bellcrank needle bearings



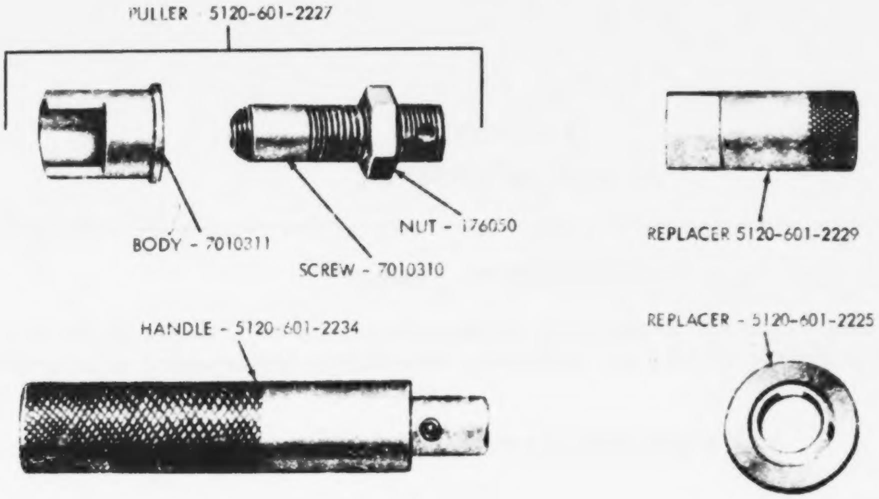
ORD E81655

Figure B-1. Special tools authorized for organizational maintenance.

Section III

Table 4. Special Tools That May Be Allowed Organizational Maintenance upon Authorization of Direct Support Supervisor

Item	Functional group	Federal stock number	Reference		Use
			Fig.	Par.	
Puller	0700 %%	5120-601-2227 (7010309) CONSISTS OF:			Used for removal of transmission shift rail oil seals
Body		7010311			
Nut		176050			
Screw		7010310			
Replacer	0700 %%	5120-601-2229 (7010314)			Replacing transmission shift rail oil seals
Handle	1000 %% 1100 %%	5120-601-2234 (7010321)			Used with replacer 5120-601-2225
Replacer	1000 %% 1100 %%	5120-601-2225 (7010305)			Replacing front and rear axle shaft outer oil seal



ORD E81656

Figure B-2. Special tools for organizational use when authorized.

Section IV.

NOTES FOR MAC REMARKS COLUMN

Note 1. See appendix II of TM 5-2805-213-14 for Engine Maintenance Allocation Chart.

Note 2. For service, adjustment, replacement and repair, see TM 5-2805-213-14.

Note 3. For test, service, adjustment, replacement and repair see TM 5-2805-213-14.

Note 4. Service includes requirements on LO 9-2320-246-12 and lubrication chart in TM 9-2320-246-10.

Note. 5. Installation, replacement, repair or overhaul functions require special tools as referenced by code 0700 in section III, Tools and Test Equipment Requirements.

Note 6. Adjustment, installation, replacement, repair or overhaul functions require special tools as referenced by code 1000 in section III, Tools and Test Equipment Requirements.

Note 7. Installation, replacement, or repair functions require special tools as referenced by code 1311 in section III, Tools and Test Equipment Requirements.

Note 8. Rebuild function requires turn-in of tires for possible recap.

Note 9. Adjustment, installation, replacement or repair functions require special tools as referenced by code 1401 in section III, Tools and Test Equipment Requirements.

APPENDIX C
FABRICATED PARTS

Section I. INTRODUCTION

1. Included in section II of this appendix are the drawings of fabricated parts authorized for manufacture by organizational-maintenance personnel. For a listing of these parts see applicable group in TM 9-2320-246-20P.

Section II. LISTING OF FABRICATED DRAWINGS

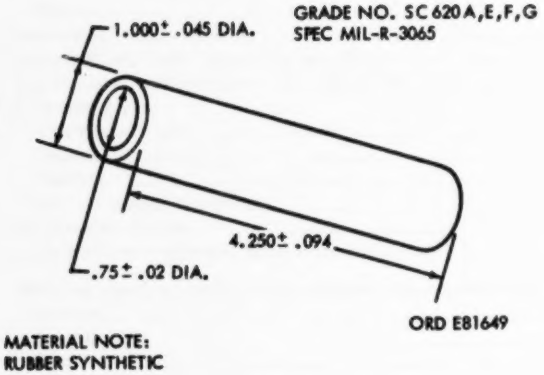

GRADE NO. SC 620 A,E,F,G
SPEC MIL-R-3065
1.000± .045 DIA.
4.250± .094
.75± .02 DIA.
ORD E81649
MATERIAL NOTE:
RUBBER SYNTHETIC

Figure C1. Synthetic rubber seal (10941198).

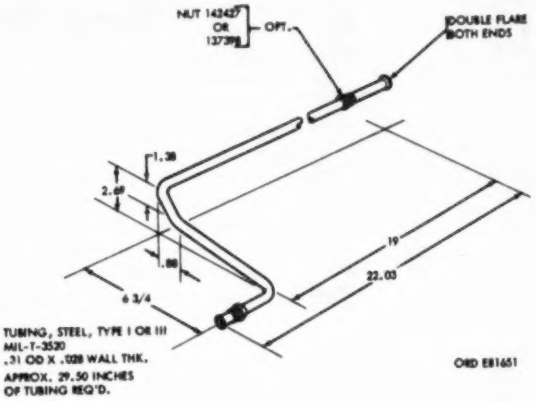

NUT 142427 OR 137398
OPT.
DOUBLE FLARE BOTH ENDS
1.38
2.69
.88
6 3/4
19
22.03
TUBING, STEEL, TYPE I OR III
MIL-T-3520
.31 OD X .028 WALL THK.
APPROX. 29.50 INCHES
OF TUBING REQ'D.
ORD E81651

Figure C3. Fuel line tube assembly (7049689).

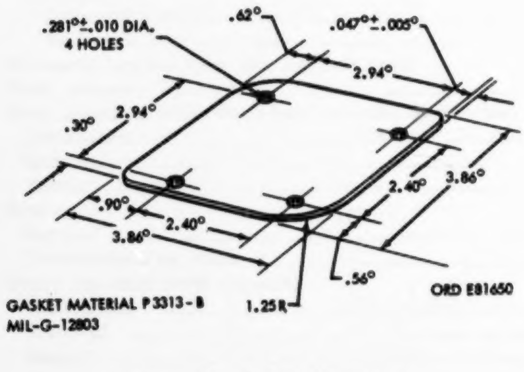

.281°±.010 DIA.
4 HOLES
.62°
.047°±.005°
2.94°
.30°
2.94°
2.40°
3.86°
.90°
2.40°
3.86°
.56°
1.25R
ORD E81650
GASKET MATERIAL P3313-B
MIL-G-12803

Figure C2. Gasket (8336114).

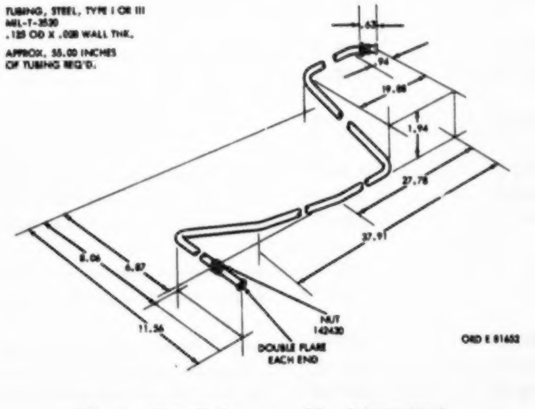

TUBING, STEEL, TYPE I OR III
MIL-T-3520
.125 OD X .028 WALL THK.
APPROX. 35.00 INCHES
OF TUBING REQ'D.
.63
.94
19.88
1.94
27.78
37.91
8.06
6.87
11.36
NUT 142430
DOUBLE FLARE EACH END
ORD E 81652

Figure C4. Tube assembly (10929936).

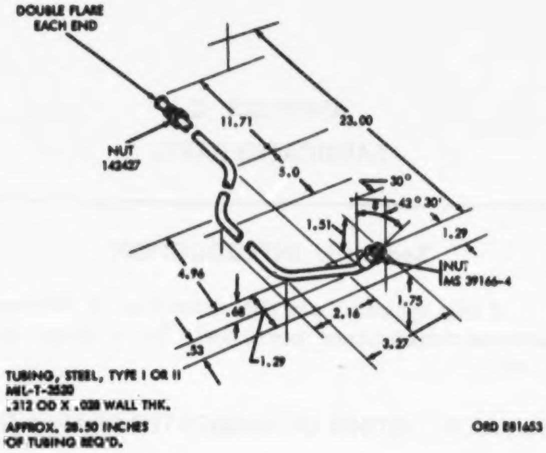

DOUBLE FLARE EACH END
NUT 142427
11.71
23.00
5.0
30°
42° 30'
1.51
1.29
NUT MS 39166-4
4.96
1.75
.68
2.16
3.27
.53
1.29
TUBING, STEEL, TYPE I OR II
MIL-T-3520
.312 OD X .028 WALL THK.
APPROX. 28.50 INCHES
OF TUBING REQ'D.
ORD E81653

Figure C5. Tube assembly (10941172).

INDEX

	Paragraph	Page
Accidents, field report of	1-3b	1-3
Adjustment:		
Brakeshoe and deflector shield assembly	2-55c	2-47
Front flexible linkage	2-57a(3)	2-49
Tie rods M274A2 through M274A4	2-67d	2-55
Tie rods M274A5	2-67e	2-57
Tie rods, alternate procedures	2-67f	2-58
Air cleaner:		
Data:		
Make	2-29b	2-20
Manufacturer's number	2-29b	2-20
Type	2-29b	2-20
Installation	2-36c	2-25
Removal	2-36b	2-35
Service	2-36a	2-24
Allocation, maintenance	1-2	1-2
Ammunition, field report of accident	1-3b(2)	1-3
Application, authorization for, litter kit	3-7	3-1
Armament kit:		
Description and authorization	3-3	3-1
General	3-2	3-1
Service	3-4	3-1
Army shipping documents	4-1c	4-1
Authorized forms	1-3a	1-3
Axle and transmission, troubleshooting, table 2	2-15	2-8
Bearing carrier, yoke, clutch control rear cable, and clutch release bearing:		
General	2-23a	2-14
Installation	2-23b(2)	2-14
Removal	2-23b(1)	2-14
Bearings, bellcrank (*See* Bellcrank bearings)		
Bellcrank bearings:		
Installation:		
Bellcrank bearings, front	2-68b	2-59
Bellcrank bearings, rear	2-68d	2-60
Removal:		
Bellcrank bearings, front	2-68a	2-59
Bellcrank bearings, rear	2-68c	2-60
Bellcrank, tow bar (*See* Tow bar bellcrank)		
Body, general	2-83	2-66
Boot, universal joint, wheel hub and steering knuckle:		
Installation	2-51c	2-38
Removal	2-51a	2-36
Repair	2-51b	2-38
Brake:		
General	2-54	2-45
Troubleshooting, table 2	2-15	2-6
Brake and shift lever support:		
Installation	2-77c	2-64
Removal	2-77a	2-63
Repair	2-77b	2-64

	Paragraph	Page
Brake and shift lever support assembly:		
Assembly	2-45c	2-30
Disassembly	2-45b	2-30
Installation	2-45d	2-30
Removal	2-45a	2-30
Brakeband and dirt and liquid deflector:		
Installation	2-56b	2-49
Removal	2-56a	2-47
Brakeshoe and deflector shield assembly:		
Adjustment	2-55c	2-47
Installation	2-55b	2-47
Removal	2-55a	2-45
Carburetor:		
Description	2-29a	2-20
General	2-28	2-20
Carburetor control front cable, accelerator and hand throttle:		
Installation	2-33c	2-23
Removal	2-33a	2-22
Repair	2-23b	2-23
Carburetor control rear cable:		
Installation	2-34c	2-24
Removal	2-34a	2-23
Repair	2-34b	2-23
Checks and services, preventive-maintenance:		
Table 1:		
After road test	2-14	2-5
During road test	2-14	2-4
Prior to road test	2-14	2-3
Choke cable:		
Installation	2-35c	2-25
Removal of choke-pull cable assembly	2-35a	2-24
Repair	2-35b	2-24
Clutch:		
Coordination with maintenance	2-22a	2-14
Description	2-22b	2-14
General	2-21	2-14
Troubleshooting, table 2	2-15	2-6
Clutch control front cable assembly:		
Installation	2-23c(2)	2-15
Removal	2-23c(1)	2-14
Clutch control rear cable, clutch release bearing, bearing carrier, and yoke:		
Installation	2-23b(2)	2-14
Removal	2-23b(1)	2-14
Clutch controls:		
Description	2-23a	2-14
General	2-21	2-14
Clutch pedal and lever:		
Installation	2-23d(2)	2-16
Removal	2-23d(1)	2-16
Clutch release bearing, bearing carrier, yoke, and clutch control rear cable:		
General	2-23a	2-14
Installation	2-23b(2)	2-14
Removal	2-23b(1)	2-14
Common tools and equipment	2-6	2-1
Control rod rigid linkage:		
Installation	2-44b	2-29
Removal	2-44a	2-29
Cooling system, troubleshooting, table 2	2-15	2-7
Coordination with direct and general support-maintenance personnel	2-16	2-10

	Paragraph	Page
Data plates, general	2-91	2-69
Data tabulated, reference	1-5	1-3
Deficiencies, correction of	2-4	2-1
Demolition of materiel	4-5	4-5
Deprocessing vehicle	5-1	5-1
Description:		
Clutch controls	2-23a	2-14
Litter kit	3-6	3-1
M274 series vehicle	1-4	1-3
Description and authorization	3-3	3-1
Description and data, fuel system	2-29	2-20
Description and data, steering system	2-66	2-53
Disassembly and assembly:		
Brake and shift lever support assembly	2-45b, c	2-30
Universal joint	2-48a, c	2-30
Draglink:		
Installation	2-69b	2-61
Removal	2-69a	2-61
Draglink, tow bar (*See* Tow bar draglink)		
Electrical, hour meter (*See* Hour meter, electric)		
Electrical system, general	2-39	2-27
Engine:		
Installation	2-18	2-11
Removal	2-17	2-10
Troubleshooting, table 2	2-15	2-6
Engine air cooling system	2-20	2-12
Engine description and data:		
Data	2-19b	2-12
Description	2-19a	2-12
Engine fuel system lines and tubes	2-20	2-12
Specific information, TM 5-2805-213-14		
Engine guard, M274A3:		
General	2-87	2-67
Installation	2-88b	2-68
Removal	2-88a	2-67
Engine guard, M274A2 and M274A5:		
Installation	2-90b	2-69
Removal	2-90a	2-68
Engine guard, M274A4:		
Installation	2-89b	2-68
Removal	2-98a	2-68
Equipment improvement recommendations	1-3c	1-3
Equipment log book (binder)	2-2	2-1
Exhaust manifold	2-20	2-12
Exhaust system, troubleshooting, table 2	2-15	2-7
Fan assembly	2-20	2-12
Fan belt	2-20	2-12
Fan belt guard and fan guard	2-20	2-12
Fan drive pulley	2-20	2-12
Fastener, spring cylinder (*See* Spring cylinder fastener)		
Flexible linkage, footbrake:		
Front flexible linkage:		
Adjustment	2-57a(3)	2-49
Installation	2-57a(2)	2-49
Removal	2-57a(1)	2-49
Rear flexible linkage:		
Installation	2-57b(2)	2-50
Removal	2-57b(1)	2-50

	Paragraph	Page
Flexible linkage, handbrake:		
Installation	2-58b	2-50
Removal	2-58a	2-50
Flexible linkage, handbrake, M274A3:		
Installation	2-59b	2-51
Removal	2-59a	2-51
Footbrake flexible linkage (*See* Flexible linkage, footbrake)		
Forms, records, and reports:		
Authorized forms	1-3a	1-3
Field report of accidents:		
Ammunition	1-3b(2)	1-3
Equipment improvement recommendations	1-3c	1-3
Injury to personnel or damage to materiel	1-3b(1)	1-3
Frame and brackets, general	2-76	2-63
Front axle:		
General	2-49	2-34
Installation	2-50b	2-36
Removal	2-50a	2-34
Fuel filter assembly, general	2-20	2-12
Fuel line replacement and repair:		
Installation	2-31c	2-22
Removal	2-31a	2-22
Repair	2-31b	2-22
Fuel primer pump, general	2-20	2-12
Fuel primer pump shutoff valve, general	2-20	2-12
Fuel pump, general	2-20	2-12
Fuel shutoff valve:		
Installation	2-20b(7)(b)	2-13
Removal	2-20b(7)(a)	2-13
Fuel system:		
Data	2-29b	2-20
Description	2-29b	2-20
General	2-20	2-12
Troubleshooting, table 2	2-15	2-6
Fuel tank:		
Data	2-29b	2-20
Description	2-29a	2-20
Fuel tank and screen:		
Installation	2-30b	2-21
Removal	2-30a	2-21
Fuel tank filter, data	2-29b	2-20
General:		
Armament kit	3-2	3-1
Body	2-83	2-66
Brake	2-54	2-45
Clutch	2-21	2-14
Clutch controls	2-21	2-14
Data plates	2-91	2-69
Differences between models	1-6a	1-3
Electrical system	2-39	2-27
Engine air cooling system	2-20	2-12
Engine crankcase breather system	2-20	2-12
Engine electrical system	2-20	2-12
Engine fuel system	2-20	2-12
Engine guard	2-87	2-67
Frame and brackets	2-76	2-63
Front axle	2-49	2-34
Fuel, air and exhaust systems	2-28	2-20
Litter kit	3-5	3-1
Lubrication instructions	2-9a	2-2

Paragraph Page

- General:—Continued
  - M274A5 vehicle, rear axle 2-53 2-44
  - Preliminary services 2-3a 2-1
  - Preventive-maintenance service 2-10 2-2
  - Propeller shaft 2-46 2-32
  - Radio intereference suppression 2-97 2-71
  - Rear axle and transmission assembly 2-52 2-41
  - Recoil starter and controls 2-24 2-16
  - Service upon receipt of materiel 2-1 2-1
  - Steering system 2-65 2-53
  - Storage instructions 4-2a 4-1
  - Tools, equipment, and repair parts 2-5 2-1
  - Transmission linkage and shift levers 2-43 2-29
  - Vehicle, deprocessing 5-1 5-1
  - Vehicle markings 1-7 1-3
  - Wheels, tires, and tubes 2-61 2-51

- Handbrake flexible linkage (*See* Flexible linkage, handbrake)
- Handbrake flexible linkage M274A3 (*See* Flexible linkage, handbrake, M274A3)
- Handbrake lever:
  - Installation 2-60c 2-51
  - Removal 2-60a 2-51
  - Repair 2-60b 2-51
- Handrail:
  - Installation 2-86b 2-67
  - Removal 2-86a 2-67
- Hook, seat stowage (*See* Seat stowage hook)
- Hour meter, electric, assembly 2-42a 2-27
- Hour meter, electric, installation 2-42b 2-27
- Hour meter, electric, replacement 2-42c 2-28
- Hub, wheel (*See* Wheel hub)
- Hubs, tires, and wheels (*See* Wheel hub and Wheels and tires)

- Ignition switch:
  - Installation 2-40b 2-27
  - Removal 2-40a 2-27
- Ignition switch cables:
  - Installation 2-41c 2-27
  - Removal:
    - Ignition switch-to-ground cable 2-41b 2-27
    - Ignition switch-to-magneto cable 2-41a 2-27
- Ignition system, troubleshooting, table 2 2-15 2-8
- Injury to personnel or damage to materiel 1-3b(1) 1-3
- Inspections:
  - During storage 4-2d 4-2
  - Receiving 4-2b 4-1
- Instructions, loading and blocking (*See* Loading and blocking instructions)
- Instructions, shipping (*See* Shipping instructions)
- Instructions, storage (*See* Storage instructions)
- Intake tubes and manifold 2-20 2-12

- Kit, armament (*See* Armament kit)
- Kit, litter (*See* Litter kit)

- eft front and rear, right front and rear shrouds 2-20 2-12
- Litter kit:
  - Application, authorization for 3-7 3-1
  - Description 3-6 3-1
  - General 3-5 3-1
  - Installation 3-10 3-2
  - Removal 3-11 3-2
  - Repair parts 3-8 3-1
  - Service upon receipt of materials 3-9 3-2

	Paragraph	Page
Loading and blocking instructions	4-4	4-2
Location, vehicle markings	1-7b	1-3
Lubrication instructions, general:		
General lubrication	2-9a	2-2
Operator's maintenance	2-9c	2-2
Reports and records	2-9d	2-2
Special lubrication	2-9b	2-2
Maintenance allocation	1-2	1-2
Maintenance, radio interference suppression	2-99	2-71
Marking	4-3	4-2
Markings, vehicle (*See* Vehicle markings)		
Materiel, demolition of	4-5	4-5
Models, differences between:		
General	1-6a	1-3
Models	1-6b	1-3
Muffler:		
Installation	2-38b	2-25
Removal	2-38a	2-25
M274A5 Vehicle, rear axle cover housing and hub assembly:		
General	2-52a	2-41
Installation	2-53b	2-44
Removal	2-53a	2-44
Oil seal and brakeband (*See* Brakeband and dirt and liquid deflector)		
Oil seal and brakeshoe (*See* Brakeshoe and deflector shield assembly)		
Painting	2-11	2-2
Plate, caution:		
Installation	2-93b	2-70
Removal	2-93a	2-70
Plate, ignition switch instruction:		
Installation	2-96b	2-70
Removal	2-96a	2-70
Plate, instruction and caution:		
Installation	2-92b	2-69
Removal	2-92a	2-69
Plate, valve venting instruction:		
Installation	2-94b	2-70
Removal	2-94a	2-70
Plate, vehicle data:		
Installation	2-95b	2-70
Removal	2-95a	2-70
Plates, data, general	2-91	2-69
Precautions	1-3d	1-3
Preliminary services (*See* Services, preliminary)	2-8	2-1
Preservatives, removal of	5-3	5-1
Preservatives, removal of prior to shipment	4-1b	4-1
Pressure, tire	5-4	5-1
Preventive-maintenance services, general procedures:		
Automatically applied	2-13a	2-3
Plates	2-13d	2-3
Servces:		
Adjust	2-13e(1)	2-3
Clean	2-13e(2)	2-3
Modification work order application	2-13e(5)	2-3
Special lubrication	2-13e(3)	2-3
Tighten	2-13e(4)	2-3
Special conditions	2-13f	2-3
Specific procedures	2-14	2-3
Unwashed vehicle	2-13c	2-3

	Paragraph	Page
Procedures, general:		
Automatically applied	2–13a	2–3
Plates	2–13d	2–3
Services:		
Adjust	2–13e(1)	2–3
Clean	2–13e(2)	2–3
Modification work order application	2–13e(5)	2–3
Special lubrication	2–13e(3)	2–3
Tighten	2–13e(4)	2–3
Unwashed vehicle	2–13c	2–3
Processing tags, removal of	5–5	5–1
Propeller shaft:		
General	2–46	2–32
Installation	2–47b	2–33
Removal	2–47a	2–33
Troubleshooting, table 2	2–15	2–6
Radio interference suppression:		
General	2–97	2–71
Maintenance	2–99	2–71
System	2–98	2–71
Rain deflector and precleaner:		
Installation	2–37c	2–35
Removal	2–37a	2–25
Service	2–37b	2–25
Rear axle and transmission assembly:		
General	2–52a	2–41
Installation	2–52c	2–43
Removal	2–52b	2–42
Rear axle cover housing and hub assembly M274A5	2–53	2–44
Installation	2–53b	2–44
Removal	2–53a	2–44
Reassembly, vehicle	5–2	5–1
Recoil starter and controls, removal	2–25	2–16
Recoil starter and starter controls, installation	2–27	2–18
Recording repairs	2–12	2–2
Records, forms, and reports (*See* Forms, records, and reports)		
Removal and Installation:		
Air cleaner	2–36b, c	2–25
Bellcrank bearings, front and rear	2–68	2–59
Bellcrank, tow bar	2–71	2–61
Boot, universal joint, wheel hub and steering knuckle	2–51a, c	2–36
Brake and shift lever support	2–77a, c	2–63
Brake and shift lever support assembly	2–45a, d	2–30
Brakeband and dirt and liquid deflector	2–56a, b	2–47
Brakeshoe and deflector shield assembly	2–55a, b	2–45
Carburetor control front cable, accelerator and hand throttle	2–33a, c	2–22
Carburetor control rear cable	2–33a, c	2–22
Choke cable	2–35a, c	2–24
Clutch control front cable assembly	2–23c(1), (2)	2–14
Clutch pedal and lever	2–23d(1), (2)	2–16
Clutch release bearing, bearing carrier, yoke, and clutch control rear cable	2–23b(1), (2)	2–14
Control rod rigid linkage	2–44a, b	2–29
Draglink	2–69a, b	2–61
Draglink, tow bar	2–70a, b	2–61
Engine	2–17, 2–18	2–10
Engine guard M274A3	2–88a, b	2–67

	Paragraph	Page
Removal and Installation:—Continued		
Engine guard M274A2 and M274A5	2-90a, b	2-68
Engine guard M274A4	2-89a, b	2-68
Flexible linkage, front footbrake	2-57a(1), (2)	2-49
Flexible linkage, handbrake	2-58a, b	2-50
Flexible linkage, handbrake, M274A3	2-59a, b	2-51
Flexible linkage, rear footbrake	2-57b(1), (2)	2-50
Front axle	2-50a, b	2-34
Fuel line	2-31a, c	2-22
Fuel shutoff valve	2-20b(7)(a) 2-20b(7)(b)	2-13 2-13
Fuel tank and screen	2-30a, b	2-21
Governor assembly	2-20	2-12
Governor control linkage rod	2-20	2-12
Handbrake lever	2-60a, c	2-51
Handrail	2-86a, b	2-67
Ignition switch	2-40a, b	2-27
Ignition switch cables, magneto, ground	2-41a, b, c	2-27
Muffler	2-38a, b	2-25
M274A5 vehicle, rear axle cover housing and hub assembly	2-53	2-44
Plate, caution	2-93a, b	2-70
Plate, ignition switch instruction	2-96a, b	2-70
Plate, instruction and caution	2-92a, b	2-69
Plate, valve venting and instruction	2-94a, b	2-70
Plate, vehicle data	2-95a, b	2-70
Powerplant	2-17	2-10
Propeller shaft	2-47a, b	2-33
Rear axle and transmission assembly	2-52b, c	2-42
Seat stowage hook	2-80a, b	2-64
Spring cylinder fastener	2-85a, b	2-67
Steering arm	2-72a, b	2-62
Steering gear	2-74a, b	2-62
Steering gear, M274A3	2-75a, b	2-63
Steering gear trunnion support	2-78a, c	2-64
Steering gear tunnion support, M274A3	2-79a, c	2-64
Steering wheel	2-73a, b	2-62
Tie rods	2-67a, c	2-55
Tires	2-62a, b	2-51
Tube	2-63a, c	2-52
Wheel and tire	2-62a, b	2-51
Wheel hub	2-51	2-36
Repair:		
Boot universal joint and steering knuckle	2-51b	2-38
Brake and shift lever support	2-77b	2-64
Carburetor control front cable, accelerator and hand throttle	2-33b	2-23
Carburetor control rear cable	2-34b	2-24
Choke cable	2-35b	2-24
Handbrake lever	2-60b	2-51
Steering gear trunnion support	2-78b	2-64
Steering gear trunnion support, M274A3	2-79b	2-64
Tie rods	2-67b	2-55
Tube	2-63b	2-52
Universal joint	2-48b	2-34
Repair parts	2-8	2-2
Repair, recording	2-12	2-2
Replacement and repair, fuel line	2-31b	2-22

	Paragraph	Page
Reports, records, and forms (*See* Forms, records, and reports)		
Road tests:		
Table 1:		
After road test	2-14	2-5
During road test	2-14	2-4
Prior to road test	2-14	2-3
Rocker arms and valve clearance adjustment	2-20	2-12
Rotation, tire (*See* Tires)		
Scope:		
Manual	1-1	1-1
Troubleshooting	2-15	2-6
Seat cushion	2-84	2-66
Seat cushion:		
Front half-seat cushion		
Installation	2-84a(2)	2-66
Removal	2-84a(1)	2-66
Rear half-seat cushion		
Installation	2-84b(2)	2-66
Removal	2-84b(1)	2-66
Seat stowage hook:		
Installation	2-80b	2-65
Removal	2-80a	2-64
Service, armament kit	3-4	3-1
Service, air cleaner	2-36a	2-25
Services, preliminary:		
General procedures	2-3a	2-1
Specific procedures	2-3b	2-1
Service, preventive-maintenance:		
General	2-10	2-2
Procedures, general:		
Automatically applied	2-13a	2-3
Operator participation	2-13b	2-3
Plates	2-13d	2-3
Services:		
Adjust	2-13e(1)	2-3
Clean	2-13e(2)	2-3
Modification work order application	2-13e(5)	2-3
Special conditions	2-13f	2-3
Special lubrication	2-13e(3)	2-3
Tighten	2-13e(4)	2-3
Unwashed vehicle	2-13e	2-3
Specific procedures	2-14	2-3
Service upon receipt of materials, litter kit	3-9	3-2
Service upon receipt of materials, vehicle	2-1	2-1
Services and checks, preventive-maintenance (*See* Checks and services, preventive-maintenance)		
Shift and brake lever support (*See* Brake and shift lever support)		
Shipping instructions:		
Army shipping documents	4-1c	4-1
Preparation for shipment	4-1a	4-1
Preservatives, removal of, and prior to shipment	4-1b	4-1
Shrouds, left front and rear, right front and rear	2-20	2-12
Site, storage	4-2c	4-2
Size and style of markings, vehicle	1-7c	1-4
Special tools and equipment	2-7	2-2
Specific procedures	2-3b	2-1
Spring cylinder fastener:		
Installation	2-85b	2-67
Removal	2-85a	2-67

	Paragraph	Page
Starter and controls, engine recoil:		
General	2–24	2–16
Installation	2–27	2–18
Removal	2–25	2–16
Starter cable tube repair or replacement	2–26	2–17
Installation	2–27	2–18
Starting system, troubleshooting, table 2	2–15	2–8
Steering arm:		
Installation	2–72b	2–62
Removal	2–72a	2–62
Steering gear:		
Installation	2–74b	2–62
Removal	2–74a	2–62
Steering gear, M274A3:		
Installation	2–75b	2–63
Removal	2–75a	2–63
Steering gear trunnion support:		
Installation	2–78c	2–64
Removal	2–78a	2–64
Repair	2–78b	2–64
Steering gear trunnion support, M274A3:		
Installation	2–79c	2–64
Pemoval	2–79a	2–64
Repair	2–79b	2–64
Steering knuckle and boot universal joint:		
Installation	2–51c	2–38
Removal	2–51a	2–36
Repair	2–51b	2–38
Steering system:		
Description and data	2–66	2–53
General	2–65	2–53
Steering, troubleshooting, table 2	2–15	2–9
Steering wheel:		
Installation	2–73b	2–62
Removal	2–73a	2–62
Storage instructions:		
General	4–2a	4–1
Inspection during storage	4–2d	4–2
Receiving inspections	4–2b	4–1
Removal from storage	4–2e	4–2
Storage site	4–2c	4–2
Tables:		
Table 1. Preventive-maintenance checks and services	2–14	2–3
Table 2. Troubleshooting	2–15	2–6
Tabulated data (*See* Data, tabulated)		
Tags, processing, removal of	5–5	5–1
Tape, reflective	1–7d	1–4
Tie rods:		
Adjustment M274A2 through M274A4	2–67d	2–55
Adjustment M274A5	2–67e	2–57
Adjustment, alternate procedures	2–67f	2–58
Installation	2–67c	2–55
Removal	2–67a	2–55
Repair	2–67b	2–55
Tire pressure	5–4	5–1
Tires:		
Installation	2–62b	2–52
Removal	2–62a	2–51
Rotation	2–64	2–52

	Paragraph	Page
Tires and wheels, troubleshooting, table 2	2-15	2-9
Tires, wheels, and hubs (*See* Wheel hub and **Wheels and tires**)		
Tools, equipment, and repair parts:		
Common tools and equipment	2-6	2-1
General	2-5	2-1
Repair parts	2-8	2-2
Special tools and equipment	2-7	2-2
Tow bar bellcrank:		
Installation	2-71b	2-61
Removal	2-71a	2-61
Tow bar bracket:		
Installation	2-81b	2-65
Removal	2-81a	2-65
Tow bar draglink:		
Installation	2-70b	2-61
Removal	2-70a	2-61
Tow bar support:		
Installation	2-82b	2-65
Removal	2-82a	2-65
Transmission and axle, troubleshooting, table 2	2-15	2-8
Transmission and rear axle assembly:		
General	2-52a	2-41
Installation	2-52c	2-43
Removal	2-52b	2-42
Transmission linkage and shift levers, general	2-43	2-29
Troubleshooting:		
Scope	2-15	2-6
Table 2:		
Axle and transmission	2-15	2-8
Brake	2-15	2-9
Clutch	2-15	2-8
Cooling system	2-15	2-7
Engine	2-15	2-6
Exhaust system	2-15	2-7
Fuel system	2-15	2-7
Hour meter	2-15	2-9
Ignition system	2-15	2-8
Propeller shaft	2-15	2-9
Starting system	2-15	2-8
Steering	2-15	2-9
Wheels and tires	2-15	2-9
Tube:		
Installation	2-63c	2-52
Removal	2-63a	2-52
Repair	2-63b	2-52
Universal joint:		
Assembly	2-48c	2-34
Disassembly	2-48a	2-33
Repair	2-48b	2-34
Unusual conditions, maintenance under	2-100	2-71
Valve clearance adjustment and rocker arms	2-20	2-12
Vehicle:		
General	5-1	5-1
Preservatives, removal of	5-3	5-1
Reassembly	5-2	5-1
Vehicle markings:		
General	1-7a	1-3
Location	1-7b	1-3

	Paragraph	Page
Vehicle markings—Continued		
Size and style of markings	1-7c	1-4
Tape reflective	1-7d	1-4
Wheel and tire:		
Installation	2-62b	2-52
Removal	2-62a	2-51
Wheel hub, hub retainer nut, and preformed packing	2-51	2-36
Wheels and tires, troubleshooting, table 2	2-15	2-9

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